

MINIMUM LEVELS OF LEARNING AT THE PRIMARY STAGE

*Syllabi Including
Common Core Components*



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FOREWORD

The National Council of Educational Research and Training (NCERT) has developed its new document for the Ten-Year School titled 'National Curriculum for Primary and Secondary Education — A Framework-1985 (Revised Edition, 1988)' This document is a forerunner of the National Policy on Education-1986, which incorporates the basic philosophy of the national curriculum into the policy framework Both the Framework and the Policy were developed after a great deal of national debate and deliberations through national and regional seminars and a variety of other modes of interactions and exchange of ideas These are two historic documents which hold the promises of revolutionising the content and processes of school education through out the country The Programme of Action document which provides an elaboration of NPE-86, has recommended the development of curricular guidelines and exemplar curricular and instructional materials

In order to provide details in respect of various ideas in the two documents it was felt necessary to develop detailed curricular guidelines and exemplar curricular frames and syllabi in various areas It was also felt that through these materials the Council would be able to communicate more effectively the concept of Minimum Levels of Learning and desired approach to curriculum transaction in school to various levels of educational functionaries

The materials included in this document have been developed through several working groups constituted for this purpose by the Council They have been further subjected to close examination and review by the Academic Committee of the Council consisting of the representatives from different States and Union Territories. The present materials are being circulated to various State Governments and other user agencies It is hoped that the materials will be found useful for guiding the development of instructional materials on a variety of formats and in their effective use in the classroom situations in different parts of the country The contributions of all the faculty members of NCERT involved in this venture and of those from outside the NCERT who have contributed to this great task are gratefully acknowledged

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Director

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CHAPTER 1

MINIMUM LEVELS OF LEARNING AND COMMON CORE COMPONENTS

Background

The National Policy on Education—1986 (NPE) has noted the three major achievements of the implementation of the National Policy on Education—1968, namely, (i) considerable expansion in educational facilities all over the country at all levels, (ii) acceptance of a common structure of education throughout the country and the introduction of the 10+2+3 system of education by most States, and (iii) laying down a common scheme of studies for boys and girls, incorporating science and mathematics as compulsory subjects and assigning work experience a place of importance in the school curricula. Although gradual, it was indeed a big leap forward towards evolving a National System of Education (NSE). The NPE has emphasised the need for continuing the efforts for further consolidation of the foundation so well laid.

While making a strong recommendation for a common structure of the ten year school education in the country, the Education Commission (1964-66) addressed itself to the question of adoption of a common curriculum. They observed:

"At present, a common curriculum is adopted for all schools in a state. This rigid arrangement proves detrimental to progress because the prescribed curriculum is generally beyond the competence of weaker institutions while it fails to provide adequate challenges to the better ones."

Thus the Commission did not favour prescribing of a common or uniform curriculum throughout the country. On the contrary, greater flexibility was recommended for curriculum development and transaction in order to cater to the needs of weaker schools and the learners belonging to the disadvantaged sections of the society. Nevertheless, the need for inculcating certain constitutional and other basic values in every Indian child has also been equally and strongly felt in the country.

National System of Education and National Curricular Framework (NSE & NCF)

It is gratifying to note that the NPE has envisaged evolving of the National System of Education based on a National Curricular Framework which contains "a common core with other components that are flexible." The main

implication underlying this recommendation is the need for providing opportunities to every Indian child to acquire knowledge, to develop concepts/ideas, skills and to inculcate interests, attitudes and values in respect of the following common core components:

- 1 *The history of India's freedom movement*
- 2 *The constitutional obligations*
- 3 *Other content essential to nurture national identity*
- 4 *India's common cultural heritage*
- 5 *Egalitarianism, Democracy and Secularism*
- 6 *Equality of the sexes*
- 7 *Protection of the environment*
- 8 *Removal of social barriers*
- 9 *Observance of the small family norm*
- 10 *Inculcation of the scientific temper*

The ground for the introduction of such common core components was prepared through the implementation of "The Curriculum for the Ten-Year School—A Framework" brought out by NCERT in 1975 as a sequel to the Education Commission's report (1964-66) and the adoption of the National Policy of Education—1968.

These common core components are central to each and every curriculum developed by the national or state agency(ies) and, therefore, non-negotiable components of the National Curricular Framework. Put simply, *every teacher must keep these components of curriculum in view and must make conscious efforts to teach and evaluate the attainment of children in the same. In other words, these cannot, and should not be missed in any school, nor by any teacher.*

Need for Defining Minimum Levels of Learning (MLL)

At this juncture, it is necessary to clarify that the terms "core," "uniform" and "common" are not synonymous. Their indiscriminate use has created a false impression, as though a "whole curriculum" is meant to be prescribed throughout the country. To clarify, the common core components are meant to be the part of the whole curriculum which has sufficient scope for integrating flexible components relevant to local, specific situations. Thus, the NPE has given a sense of direction to the ongoing process of curriculum renewal in the country by giving an

added impetus to the concept of a common core as an effective instrument for imparting information and developing concepts, skills, interests, attitudes and values required by the future citizens to face the challenges posed to the Indian nation

(The main thrust of the NPE is—“*up to a given level, all students, irrespective of caste, creed, location or sex, have access to education of a comparable quality*” As observed by Education Commission, a large number of schools and therefore learners are not able to attain even a minimum level of education. Hence, the second most important recommendation has been made to lay down the Minimum Levels of Learning for each stage of education. There is an urgent need to undertake the task of defining Minimum Levels of Learning for each stage of school education and for each area of learning included in the common scheme of studies. It is also necessary to clearly identify the relevant content of common core components for each of the learning areas under each stage of school education. If this is not done, it is feared that even the National Curricular Framework—1988 (Revised Edition) developed by NCERT might be interpreted the way the previous one was, thereby jeopardising the very objective of cohesion and consolidation in evolving the National System of Education.

This document attempts to define the Minimum Levels of Learning (MLL) as well as the Minimum Learning Outcomes (MLOs) and also to identify the content relevant to common core components for each of the learning areas for the Primary Stage of Education, i.e., classes I-V. While conscious efforts have been made to use rational and empirical evidence in defining the Minimum Levels of Learning and MLOs, wherever data were not readily available, *ad hoc* assumptions and intuitive guesses have been used in developing this document. Needless to mention, this will not only have to be subjected to a wide debate but also to continuous, rigorous research as a part of the implementation of the National Policy on Education.

Before the rationale for defining Minimum Levels of Learning (MLL) is presented and general objectives stated, a need is felt to offer some clarifications in order to facilitate communication on rather somewhat alien subject. The concept of Minimum Levels of Learning (MLL) is quite new to most of the educational functionaries, although some innovative and experimental work has been done during the last decade in the country.

This is the first conscious and systematic attempt of defining this concept for the purpose of integrating it into our national system of education. In this endeavour one is indeed faced with both conceptual and operational problems. It is, therefore, but natural that the explanation and subsequent elaboration may not be found adequate, or

fully satisfactory.

And yet, there is hardly any alternative at this juncture, for, the momentum generated due to the NPE and the Programme of Action (POA), demands urgent formulation of some indicators—how crude or primitive they may appear to be, something as reference, something to take off, something to build upon and something to fall back on. It is obvious that such efforts cannot be perfect. Far from it, they would leave much to be desired. Lest this may be construed as an apology or weak defence of this exercise, the reader may be reminded of the fact that many a concept in education and psychology have been in evolving state even after decades of empirical work on them. For instance, concepts like intelligence, motivation, achievement and so on, despite voluminous research, are still controversial, and have yet to be universally accepted. The concept of Minimum Level of Learning is no exception. Thus, efforts made in this document must be viewed and assessed in this light. It is hoped that the following clarifications would help the reader to understand our position.

- 1 This document is primarily addressed to curriculum developers, planners, writers of instructional materials, i.e., textbooks, teacher's manuals, work books, etc., test designers and others. While some teachers can derive benefit from it, specially the content spelled out in detail, it will be necessary to prepare handbooks, manuals, etc. for teachers at large for the dissemination of the concept.
- 2 The approach adopted in defining MLL is two fold—(i) Formulation of general objectives, and (ii) Spelling out specific learning outcomes designated as Minimum Learning Outcomes (MLOs). The second chapter contains the first part, i.e., General Objectives for each of the learning areas recommended for transaction in the National Curriculum for Elementary and Secondary Education—A Framework. They are, Language, Mathematics, Environmental Studies (EVS I & II), Work Experience, Art Education and Health-Physical Education.
- 3 Further elaboration of these objectives in terms of MLL and related content—both general and common core components—is done in subsequent chapters. The point that needs to be emphasized is that objectives and minimum learning outcomes are closely interlinked and they have to be read and interpreted together. Put simply, reading objectives alone would not serve the purpose. It has to be followed up by reading relevant MLOs in the concerned chapter.
- 4 The statement of general objectives is by nature broad and, therefore, not as concrete and specific as one would expect it to be to start with.

- 5 Though not clearly demarcated, objectives relate to Cognitive, Psychomotor and Affective aspects of child's growth and development, i.e., mental, physical, social and emotional development

Rationale for Developing MLL and MLOs

Two main processes have been adopted for developing the Minimum Levels of Learning and MLOs at the Primary Stage. They are: 1 Scanning theoretical/conceptual literature, including instructional materials existing at the national and international levels (as and when necessary), and 2 Deriving support from the empirical data—available from researches conducted by universities and institutions, e.g., in the area of language skills, vocabulary, etc. in general, and the experience gained in implementing long-term innovative projects by NCERT in the States/UTs, particularly Primary Education Curriculum Renewal (PECR—Formal) and Comprehensive Access to Primary Education (CAPE—NFE see References for additional information)

1 THEORETICAL/CONCEPTUAL REFERENCE

From the time of its inception, NCERT has been engaged in developing curricula, objective-based instruction and objective-based evaluation for the school stage. Two major development-cum-evaluation projects—one in Language (the mother tongue) and the other in Science (Physics) were conducted at Central Institute of Indian Languages (CIIL, Mysore) and Regional College of Education (RCE, Mysore) during 1972-76. The experiences gained and findings obtained as a result of these carefully designed experimental projects helped develop the following: Resource Material in Physics and a Bridge Course in Kannada, Strategies of Teaching and Evaluating Learning in terms of Expected Behavioural Outcomes (EBOs). The main curricular activities carried out under these projects were: (a) Formulating General Objectives, (b) Identification of Learning Outcomes, (c) Trying them out in controlled situations with the help of suitable teaching-learning strategies, and (d) Evaluating the learning outcomes attained by pupils. Thus, the holistic foundation of curriculum development was laid during the initial years of NCERT's existence.

2 PROJECT IMPLEMENTATION AND EMPIRICAL EVIDENCE

As rigorous efforts of quantitative expansion of school education, specially at the primary stage, were continued in the country, concern for maintaining standard and improving quality of education was also voiced. Some early national and international studies, (e.g., Kulkarni, NCERT, 1970; Smt. S. Shukla, IEA, NCERT, 1974) indi-

cated that the attainment of children in primary education was not as good as it should have been or lower than that achieved by their counterparts in some other countries, e.g., Japan. Since then the prevalent view has been that the academic achievement of school children, particularly at the primary stage is poor, although it may be pointed out that even now systematically and empirically derived national norms in respect of all subjects (except Mathematics) are not available against which such generalisations can be tested.

Two important developments took place during 1975-76, namely, 1 Publication of the Curriculum for the Ten-Year School—A Framework, and 2 Implementation of massive, innovative projects in the States/UTs in the context of universalisation of elementary education by NCERT. Mention of two from among many such innovative projects has been made above, as they generated ideas and data which have been made the basis of this document.

Under Project PECR, a document called "Minimum Learning Continuum" (1979) was brought out with the help of educational functionaries working at various levels in participating States/UTs. This became the basis of renewal of the then existing primary curricula and development of locally specific textbooks, teacher's manuals, etc. all over the country with the help of SIEs/SCERTs. While most of the States/UTs have completed the full cycle of implementation, the project is still being implemented in some States/UTs. In 1984, a massive evaluation study on enrolment, retention, stagnation and achievement of pupils under the project was initiated, the results of which indicate the success of such strategies/interventions in raising pupil achievement significantly.

In 1979, Project CAPE was launched to develop flexible, relevant and functional curricula for the out-of-school children in the age group 9-14 years, particularly those belonging to the disadvantaged sections of the society. The curriculum design was developed utilising the Conceptual Curriculum Model developed at RCE, Mysore as a result of the two projects mentioned above. Special mention needs to be made of the fact that every small unit of learning (capsule) clearly defines the Expected Behavioural Outcomes (EBOs) in concrete terms so that content and process of development and evaluation are geared towards attaining them. It is not out of place to record that relevant curricula have been developed in the States for the primary stage.

3 PROCESS

When the task of developing the NPE was taken up, NCERT prepared a number of supporting documents along with organising a national seminar on elementary education. As the problem of defining standard of

earning/achievement came up time and again in various meetings, convergence of opinion emerged that it would be useful if minimum levels of learning for different stages of education were defined in as observable and measurable terms as possible. Hence its endorsement in the NPE-86.

Simultaneously NCERT was engaged in revising the previous ten-year school curriculum. After the approval of the NPE and POA by the Parliament, NCERT undertook the task of developing the new set of curricula and guidelines. The task of developing the curricula for the primary stage was assigned to Department of Pre-school and Elementary Education (DPSEE), which comprises the staff members who have been associated with the implementation of the above mentioned projects. The team carefully examined the relevant documents and developed guidelines for defining MLL and further spelling out Minimum Learning Outcomes (MLOs). With the help of these guidelines, which have also been endorsed by the

Academic Committee of NCERT with special invitees from the States/UTs (Sept, 1986) subject teams of experts not only spelled out the Minimum Learning Outcomes and content for each area of learning, but also made the first ever attempt to identify content related to Common Core Components. It needs to be highlighted that the data of evaluation of Project PEER have been constantly used as reference. Thus, considerable caution has been exercised in preparing this document. *It is believed that the levels of learning and allied content stated in this document are within the reach of a large majority of Indian children. It is further asserted that, if the transaction of curriculum were improved, as was done in the PEER Project Schools all over the country, there is a fair chance of attaining even higher standards (norms) of learning than have been reflected in the aggregated data of the Project* (see the report on Pupil Achievement at Primary Stage, DPSEE, NCERT, 1988)

— P N DAVE

CHAPTER 2

THE CURRICULUM MODEL AND GENERAL OBJECTIVES

Salient Features

The major objective of teaching throughout the entire primary stage of school education, i.e., classes I-V should be to develop basic skills of communication, numeracy, healthful living (along with the basic concepts of the physical and social environment around), and other life skills relating to the world of play, work and culture [creative arts—drawing and painting, music and dance (rhythmic activities)] It is imperative that at this stage a holistic view of learning is taken, as has been clearly pronounced by the NPE with reference to Early Childhood Care and Education (ECCE), and both cognitive and non-cognitive areas of learning are given equal importance and due emphasis from the very beginning. The child should be exposed to a variety of structured and non-structured learning experiences in and outside classroom/school.

It should be realised that children at this stage learn better through direct and concrete experiences. Therefore, all out efforts should be made to make learning participative, involving children fully with the help of indigenous individual and group-play activities, using situations, themes and materials readily available in the immediate environment.

The growth and development of children as clearly defined in terms of Minimum Learning Outcomes (MLOs) in the following pages with respect to each of the learning areas should be continuously and comprehensively assessed and evaluated. However, the thrust of this assessment should be diagnostic, with a view to identifying the difficulties and weaknesses of children so that they can be helped to master the basic skills/MLOs with the help of appropriate individual/group remedial programmes. Efforts must be made to improve upon the previous performance of each and every child. Put differently, all children should achieve minimum learning outcomes at the MASTERY LEVEL. As a feedback, instead of assigning marks to the performance of children, grades should be given. Needless to emphasize, sufficient information and evidence need to be collected through formal means such as paper-pencil tests, check-lists, rating scales etc., as well as informal modes like anecdotes, spot observations, role play, etc.

National Policy and Curriculum Development

It is common knowledge that there exists a gap between the macro level policy goals and their achievement at the micro/grassroots level. The laudable national intentions expressed in the broad policy statement can not be achieved without a well-laid out plan of action for their implementation. This sober realisation is clearly reflected in the following excerpt reproduced from the Education Commission's Report (1964-66).

"The report of a Commission is not a substitute for action. A report which is shelved or does not lead to action is worse than no report because it leads to frustration by arousing hopes that remain unfulfilled."

Within a short span of time after the declaration of the NPE in 1986, the Programme of Action (POA) was developed and passed by the Parliament. At the same time, NCERT was ready with the document entitled "*National Curriculum for Primary and Secondary Education—A Framework* (1985), which has now been revised in the light of the NPE as "*National Curriculum for Elementary and Secondary Education—A Framework, 1988 (Revised Version)*". This simultaneous and rapid development of a series of documents has helped not only in reducing the gap but also in maintaining an essential link between the policy and development of curriculum and instructional materials for school education.

Like the gap between the policy on education and its implementation, in curriculum organisation also a wide gap exists between the theory and practice. The document developed as a consequence of the NPE-1968 by NCERT in 1975 entitled "*The Curriculum for the Ten-Year School*" apprehended this and, therefore, warned: "*Operationally, a curriculum is not what is stated on paper, but what actually happens in a school*". The experience accumulated over the years reinforces the belief that the gap during the curriculum transaction in the classroom appears to be even worse. While there is hardly any dispute or disagreement about applying the principles of *relevance, flexibility, functionality and productivity* in developing

curriculum and allied instructional material all over the world, the practice over the years in our country has remained *centralized, subject-centred, rigid, stereotyped and dysfunctional*. A centrally prescribed curriculum is invariably accompanied by a whole package of prescribed textbooks, teacher's manuals, aids, etc. and a rigid scheme of examinations. Though conceded that some sort of arrangement is necessary in order to maintain standards and uniformity in transacting a prescribed curriculum at the state and national levels, such a rigid arrangement gets percolated all the way to school, thereby leaving little initiative for innovations and experiments to the teachers and learners. Thus, the crucial question that needs to be addressed is, how to make the process of development of curriculum and instructional materials and their subsequent implementation at the grassroots level as *decentralised, relevant, flexible, functional and productive* as possible, without jeopardizing the national, socio-cultural and political imperatives and educational goals.

Both the NPE and the NCERT Framework, therefore, strongly advocate adaptation or adjustment in the model syllabi and content spelled out in this document rather than their straight jacket adoption/prescription by the States/UTs, and, within the State/UT, by schools located in different places, by schools with children differing in abilities, having varying facilities, etc. Thus, this attempt should be considered essentially as preliminary and open for further empirical tryout, scrutiny and research.

Development and Dissemination of Curriculum Design

As NCERT embarks upon executing the tasks outlined in the NPE and POA, it is in a fortunate position to derive benefits from the rich and valuable experiences it has gained during the last two decades in developing the macro and micro level curriculum frames, syllabi, instructional materials, audio-visual aids, etc. as well as their implementation with the help of national and international innovative/experimental projects supported by UNICEF, UNESCO and UNDP. The total, although varied, experience gained until now strongly suggests that *it is possible to develop a national curriculum design and adopt/adapt it to suit the local needs and specific situations*. As a matter of fact, the major thrust of the NPE, emphasizing the need for defining the minimum levels of learning, has its origin in the document entitled "*Minimum Learning Continuum*" (NCERT, 1979). It was specially prepared to provide guidelines and frame of reference to the States/UTs for the *renewal and readjustment of their existing curricula* in order to cater to the needs and aspirations of children of diverse groups of people, particularly those belonging to the disadvantaged sections of the society. It was during this period that

NCERT, as a central agency, gained practical experience of decentralizing the process of curriculum construction and preparation of locally relevant instructional materials. It will not be out of place to highlight the fact that the Minimum Levels of Learning and Minimum Learning Outcomes defined in this document have been based on the theoretical rationale developed and the empirical results obtained from the vast data on pupil achievement in different subjects collected from the 22 States/UTs which have been participating in the innovative Project Primary Education Curriculum Renewal (PECR) since 1975 (See DPSEE NCERT report on Pupil Achievement at the Primary Stage, 1988). Realizing the immense value of such tried out concepts/ideas and processes, a view has been expressed in the revised NCERT Framework that the Minimum Learning Outcomes envisaged would emerge from the objectives (referring to the basic features of curriculum mentioned in the context of the national system of education) which would be attained through a common scheme of studies at the elementary and secondary stages. *A curriculum design based on these Minimum Learning Outcomes, a common scheme of studies and common core components is referred to as a core curriculum*.

It has, therefore, been propounded that the core curriculum will be centred around certain Minimum Learning Outcomes common for all learners. It will, thus, provide basic uniformity to the expected attainment of learners and standards of education throughout the country. Such a concept of curriculum will augment the mobility of the learners, both horizontal and lateral within and between different modes of learning. However, such a curriculum will be characterized by a great degree of flexibility in respect of content and designing of learning experiences based on local situations. Put in a proper perspective, curriculum designing and implementation have been an exciting partnership between NCERT and SCERTs/SIEs/SIERTs and other state level agencies. This document envisages the continuance of the same kind of partnership and cooperation with the States/UTs in implementing the NPE, POA and NCERT Framework.

Processes and Products of Curriculum

The ultimate outcome of a curriculum—process or product, is the Minimum Learning Outcomes developed in a learner. It may be in terms of capability to do something or change in disposition towards something. *In order to arrive at such a process/product, objectives are formulated, content is selected/derived, teaching/learning strategies, materials, aids, etc. are designed, and modes/tools/techniques of evaluation are developed*. These four are the essential processes of curriculum

development.

These first order processes result in intermediary processes and products which are used in subsequent processes. For illustration, when objectives are formulated, the products are the syllabi, curriculum guides, teacher's manuals and so on. Content is presented through textbooks, workbooks, lessons, etc. When it is method, the products are charts, models, slides, audio tapes, cassettes, films, videos, etc. which are used in providing learning experiences. When the teachers are trained, the products are the skilled teachers, who form the human resource in curriculum. When evaluation modes and procedures are developed the products are the oral-written tests, performance tests, diagnostic tests, questionnaires, opinionnaires, check-lists, etc.

It is no wonder that due to the complex nature of curriculum, different functionaries perceive it in different ways. It is also not surprising that they confuse one or the other component or the process of curriculum with the totality of curriculum. However it is necessary not to lose the focus of the totality or Gestalt of curriculum.

The Conceptual Curriculum Model

Umpteen curriculum models are available in the literature as reference. Since NCERT has been using the Taxonomy of Educational Objectives (Bloom, *et.al.*, 1963) for developing curriculum and evaluation materials for many years, the modified and tried out version of the same (Dave, P N., 1976-79) has been presented here for reference.

As the main objective of education is the total development of the learner, i.e., physical, mental, socio-emotional and spiritual, the theoretical scheme should provide scope for encompassing all types of behaviour in an integrated manner. The modified Taxonomical Models lend themselves to such hierarchical classification of learning outcomes and interlinkages. Thinking, performing of muscular activities, feelings and meditating give rise to what are technically known as **Cognitive, Psycho-motor and Affective Domain Objectives.**

The model has been presented in Figure 1. It contains all the necessary details and steps for developing curriculum frames and teaching-learning materials, strategies and evaluation procedures/tools/techniques as may be required or are relevant to specific situations. The configuration comprises the four major components of curriculum presented earlier, namely, (i) Objectives under the three Domains mentioned above in terms of process-oriented or product-centred behaviour under Column I, (ii) Content sequentially arranged under Column II, (iii) Learning Experiences in the form of a variety of teacher-pupil activities under Column III and (iv) Evaluation listing a number of problems/questions for assess-

ment under Column IV. All these components are tightly linked horizontally and vertically. If Column I is examined vertically, it will be noticed that different types of learning outcomes under objectives are listed under different domains. These outcomes determine all the subsequent processes, e.g., derivation of content, selection of teaching-learning activities and use of evaluation tools/techniques. The communications/interactions as the main means to develop and evaluate the attainment of the learner have also been indicated in the boxes. The boxes showing one-way, two-way and multi-way communications are meant to convey that given a specific learning outcome, the use of that type of communication may be more productive or efficient. For example, according to the model the one-way communication is most effective if a verbatim reproduction is aimed at as a response from the learner. It is further maintained that interactions and communications among the teacher, learner, mode, material, media and method are necessary when the higher order objectives for development are aimed at. If the contents in the first two columns under the cognitive objectives are further examined, it will be noticed that the stress is upon presentation of content, discussion and activities related to problem solving and evaluation. However the teacher-pupil activities under psycho-motor objectives consist of demonstrating skills and performing specific tasks. Further, the teacher-pupil activities under the affective domain are quite different. They are concerned with organising plays, assemblies, film shows, field trips, excursions, debates, etc.

FORMULATION OF OBJECTIVES (O)

What is an objective? Why should objectives be formulated? The experience acquired in the development of curriculum so far in NCERT indicates that the setting of clear-cut goals of instruction helps in steering the course of action a teacher and a taught are expected to take in reaching a target or reference points for organising teaching-learning activities. In the absence of clear-cut statements of objectives, the so-called curriculum consists of lists of topics related to subjects only, which may give any direction to the teacher. Since *learning is defined as a change in behaviour or disposition or cognitive structure (for that reason one may choose any definition of learning)*, it is absolutely necessary to gather *evidence of change*. Without the data on pre and post attainment of learners in any given teaching-learning situation, it is impossible to say whether learning has taken place or not. Objectives, indeed, provide useful guidelines to policy makers, curriculum framers, textbook writers, supervisors and practising teachers.

Objectives vary at different levels of explicitness. The policy statements are very broad aims/goals of national

development involving several sectors. They, in turn, become the reference points for deriving the national educational objectives. One may start with general/broad objectives referring to the future development of learners into doctors, engineers, sculptors, artists, scientists, teachers, etc. They may further be made precise by referring to dispositional states of the learners which may bridge the gap between the global and specific objectives. The statements such as the learner acquires knowledge, develops understanding or comprehends, applies, appreciates, etc. are examples of such objectives. These dispositional objectives need to be made more explicit so that they specify 'item types' which may imply mental processes such as recalling, classifying, reasoning, synthesizing, or overt behaviours such as listing, defining, writing, checking, demonstrating, etc. Thus, objectives are statements of purpose which operate at different levels and there are many words/terms, either process-oriented or product-centred, to denote these levels, e.g., aim, goal, objective, standard, competency, behavioural outcome, learning outcome, expected/essential/minimum learning outcome, etc. It is necessary to highlight again for reasons stated earlier, that the NPE and NCERT Framework have opted for the terms Minimum Levels of Learning and Minimum Learning Outcomes for designing the national curricula at the primary stage.

(a) COGNITIVE DOMAIN OBJECTIVES

These involve intellectual processes like remembering, explaining, reasoning, interpreting and problem solving. Some intellectual processes are elementary and others are more complex and consequential upon the development of the elementary ones. Psychologists and educationists have been able to identify four levels which appear to form a hierarchically graded organisation of these processes. Each level is distinguished by the nature of the mental processes involved in learning a concept. The levels of learning which are arranged with reference to the criteria of difficulty and complexity on the logical and psychological grounds, are as follows:

- * Knowledge (K)
- * Comprehension/Understanding (C/U)
- * Application (A)
- * Creativity (CRE)

(i) *Knowledge (K)* The mental processes comprising knowledge objective are listed under Column I in the model. As can be seen, this objective emphasizes remembering of facts, figures, symbols, letters, words, etc. It involves the mental processes of recognition, recall, recollection, reconstruction, restructuring and reproduction. They are fundamental to the acquisition of information

from the environment through the senses.

(ii) *Comprehension/Understanding (C/U)* This objective lays stress on the mental processes of seeing relationship and discriminating among content elements. These involve change in the thinking of the learner so that she/he is able to search for forms similar or parallel to those learned by her/him. They centre around the ability to cite similar examples, differentiate, classify things, objects, rules, methods, processes, etc. Essentially, it is the process of identifying the elements which resemble the known ones or those which differ.

(iii) *Application (A)* This objective involves the ability to use the knowledge or information acquired and the ideas/concepts, rules, principles or methods developed in dealing with or solving the problems not encountered before. It may be noted that while both K and C/U objectives remain in the field that is familiar, application moves into the area of unfamiliarity. No doubt, it requires "remembering" and "understanding", but it further requires the mental processes of reasoning, hypothesizing, inferring and predicting. This may be collectively likened to problem solving abilities.

(iv) *Creativity (CRE)* The creative process of learning is the culmination of all the other processes including those related to problem solving. It should be considered the ultimate objective of the learning process. It is necessary to clarify here that this model holds a different point of view from that which is prevalent in the psychological literature on creativity. As is well known, creativity research has not been treated as a part of the *curricular phenomenon*. It has been treated as an independent area of research. This model does not accept the dichotomy of theory and practice. Attempts have been made in the West and now in this country to investigate this phenomenon as a fundamental type and then apply the findings to the classroom instruction. This model instead propounds a hypothesis that irrespective of the domains and areas of learning (subjects), mental processes related to creativity are cumulative of the lower level processes and form the highest crest of all learning processes. Fundamentally, it involves first the ability to analyse an unfamiliar situation/problem and differentiate between the known or familiar and unknown or unfamiliar elements/components comprising it. Having carefully sorted out these two kinds of components, the learner synthesizes the same elements into a variety of patterns, the criteria being *originality, uniqueness and imagination*. Such efforts are expected to result in the discovery of connections among content elements, which leads to new/unique productions. Thus, a learner who initially starts with the acquisition of a fundamental response mechanism of mere

reproduction, develops a mechanism of creating unique production This, being essentially a curricular scheme, differentiates this important aspect of personality from a psychological construct, developed and tested mainly as a laboratory event and, therefore, envisages that conscious efforts must be made during curriculum transaction to help learners to achieve it. All children are endowed with creativeness, just like other abilities/processes. Therefore sufficient scope through an enriching environment should be provided for its realisation.

(b) PSYCHO-MOTOR DOMAIN OBJECTIVES

Great emphasis has been laid on development of manipulative skills and positive attitudes to work or the right kind of work ethics in children. It is common knowledge that over the years a sort of philosophy has been developed in our society in which "dirtying the hands" has been looked down upon. "*When one goes to school, one does not work and when one starts working, one ceases to learn/educate (Learning To Be, 1972)*" This kind of concept is not commensurate with the newly emerging concept of life-long or continuing education. There is a dire need to re-establish a sense of respect for menial work—for so called blue-collar jobs. Gandhiji repudiated this concept and formulated the Basic Education System which made a considerable dent in the psyche of Indian educators. However, what has been done and achieved leaves much to be desired. Hence, the need for proper and effective implementation of the programme of Work Experience as has been specially recommended by the NPE.

The conceptual model indicates that the task analysis of every performance should be done keeping the following criteria in view: *correctness, accuracy, speed, coordination and productivity*. Multi-way interactions and communications are the backbone of this type of learning. Active participation and involvement on the part of the learner in every sub-task are absolutely necessary. Practice and reduction of errors from trial to trial are extremely pertinent for attaining a flawless performance. Again, the concept of MASTERY LEARNING is more pertinent in the case of work, which is commonly called "perfecting the job". This apart, many socio-emotional and value traits should also be the target objectives. To name a few: cooperation, perseverance, evolving unique forms of works of art-collage, tunes, dance, rhythms, etc.

(c) AFFECTIVE DOMAIN OBJECTIVES

A view has been expressed earlier that a portion of content provides ample scope for deriving learning outcomes cutting across all the three domains. Put simply, it lends itself for developing knowledge, understanding, application of the knowledge and concepts/ideas, creating

unknown structures/patterns from the known and unknown elements/components, performing different tasks and inculcation of interests, attitudes, appreciation and values. This proposition makes it obligatory on the part of curriculum framers/textbook writers and others, to explore at the very outset the full potential of the selected portion of content for developing all possible learning outcomes. Unfortunately, as is well known, cognitive objectives have dominated both curriculum development and its transaction and, consequently, undue emphasis has been laid on them, even at the cost of non-cognitive objectives. This can indeed be labelled as lopsided development of the personality of the learner. Education as an intervention is expected to bring out all the potentialities of learners to the fullest possible.

Children are born not only with different traits but also with varying quantum in respect of each of the endowed traits. It is necessary to provide equal opportunities in cognitive and non-cognitive areas of learning at the primary stage so that the special aptitudes of children find not only their natural expression but also sufficient scope for further development. Recognizing this void in the existing curriculum, the NPE has, unequivocally declared that the values enshrined in the Indian Constitution and those belonging to our ancient and rich cultural heritage along with the other common core components should be inculcated in each and every Indian child. This obligation, i.e., the declaration of clear-cut macro level educational objectives applicable to all children of this country, makes this exercise of developing curriculum very different from the ones undertaken until now and those carried out by other nations. The Indian educationists must accept this both as a formidable challenge and a unique opportunity. In this document an attempt has been made to incorporate all the major recommendations of the NPE, viz., defining Minimum Levels of Learning (MLL), identifying Minimum Learning Outcomes (MLOs), balancing between the cognitive and noncognitive areas of learning and selecting content relevant to the common core components.

Out of the three domains, this particular domain is the most complex and difficult. Because of its complex nature, it is rather difficult to spell out all possible MLOs. Therefore, the explanation in the figure for this aspect is not as elaborate as it has been for cognitive and psychomotor domains. All the same, sufficient suggestions have been given for constructing curriculum frames and preparing teaching-learning materials.

Two important explanations need to be made at this juncture regarding this domain. One is regarding the distinction among the major objectives included under this domain and the second is the peculiar nature of these traits which make their development, measurement and evaluation extremely difficult. The development of this aspect is manifested at two levels, i.e., *cognition and*

action. For example, a child is fully aware that he/she should wash his/her hands before he/she eats using them (cognition level). However he/she does not wash his/her hands every time before eating his/her meal (action level). A more serious example is to speak the truth or not to tell a lie. A person knows that he/she should tell the truth (cognition level); but he/she does not do so even when no adverse consequence affecting anyone is involved.

There are no sharp dividing lines among interests, attitudes, appreciation and values. The distinction among them is a matter of degrees rather than of kind or substance. All of them are emotional dispositions to react in some way, favourable or unfavourable, towards persons, objects, ideas, things, etc. Hence they have feeling overtones. An individual experiences a feeling of good or bad about something. All of them are inferred from some overt indicators of the behaviours, and cannot be measured as directly as the products of learning in manipulative skills. Nevertheless, they can be distinguished from each other from the standpoint of stability and the individual's self-involvement and effect on personality make-up.

From the standpoint of stability, interests are the most temporary and values the most stable, with attitudes and appreciation somewhere in between. Interests may shift, sometimes readily, from day-to-day or week-to-week. There can be a lot of fluctuations at a young age, continuing up to the age of adolescence and, sometimes, even thereafter. Attitudes change less frequently and values are quite resistant to change or even modification. This is the precise reason why utmost care needs to be taken to provide a conducive educational environment for their proper inculcation, for the attitudes and values which are imbibed at the early, tender age, are hard to modify at the later stage. Interests refer to something specific such as the like or dislike of a particular fruit, animal, colour or flower, attitudes and values are more general and encompass large areas of experience. To illustrate, one may think of an interest in seeing a comic movie rather than a tragic one, an attitude as an acceptance or rejection of a mode of entertainment, viz., movies, outdoor sports, plays and so on, and a value as covering the entire scope and philosophy of entertainments in the life of the individual. Thus, it is clear that attitudes are somewhat more enduring dispositions, interests are less enduring, while values are almost permanent personality features of a person. The following behavioural examples may help clarify these concepts further. The learner—interests—watches football matches on the television, listens to the cricket commentary on radio, participates in the science club activities, Attitudes—likes the mathematics teacher but hates the language teacher, observes safety rules, takes care of his/her younger sister; shows respect and courtesy to elders; Values—pursues religious

activities, seeks comfortable and prosperous living, respects the other person's point of view.

Having explained objectives, and process-oriented and product-centred learning outcomes under them, it is necessary to further clarify that *no learning is exclusive or takes place in isolation from other domains. Put differently, every learning includes some learning in all the three domains.* There exists ample evidence to suggest that the affective states of the learner have a profound effect on the rate and quantum of learning. While positive affects like hope and warmth facilitate the learning process, the arousal of negative effect like fear or anxiety indeed interferes or blocks the acquisition of the desired objectives. It is for this precise reason that the policy has strongly recommended a warm, child-centred approach to be followed in imparting instruction to the learners.

(d) MINIMUM LEARNING OUTCOMES (MLOs)

As can be seen from the discussion so far, two major steps (or processes) of defining MLL have been elaborated, i.e., formulation of (general) objectives and spelling out learning outcomes (specific objectives). Though the terms 'objective' and 'learning outcomes' have already been discussed at length and the distinction between them has been 'clearly brought out in respect of the three domains of personality, there is still a need for further probing.

The concept MLL comprises three sub-concepts, namely, 'learning', 'level' and 'minimum'. As may be recalled, learning has been defined as 'change in behaviour'. Thus, behavioural changes are indicators of learning outcomes. The terms such as recall, infer, predict, analyse, etc. are the concrete examples of such indicators. The term 'level' refers to 'standard' with which 'attainment' or 'performance' can be compared or judged. Until now the term 'standard' has remained nebulous. The accompanied term 'minimum' requires that 'quantum' be now indicated.

In other words, behavioural changes (learning) should be further quantified (minimum) to indicate a 'level' (standard) of attainment and 'performance' in each learning area for each class. To be more specific, our exercise in the conceptual model has to be further expanded. For example, "He/she *knows* (objective)", is specified as "He/she *recalls* (outcome)". If it is language, the outcome should be quantified as follows: "He/she *recalls new words taught*" (The role of 'content' will be discussed later). One has to ask a question further as to what percentage of newly learned words a child *should* recall, i.e., 100%, 50%, 35% and so on. It is obvious that empirically it may vary from 0% to 100%. The point that needs to be stressed here is that so far both in transaction and evaluation it has remained vague. Not enough thought has

been given to this part until now.

It needs to be pointed that a flat statement of a learning outcome like the one made above implies as if —“All children should recall all newly acquired words”. No more justification is necessary to suggest that one needs more accurate a statement of learning outcome than this. It is because of this precise reason our curriculum model makes a subtle discrimination between Expected Behavioural Outcomes (EBOs) or intended behavioural goals set up *before* learning takes place and Real Learning Outcomes (RLOs) or actual behavioural goals attained *after* learning has taken place. Put simply, an EBO needs to be further defined as a MLO—a more quantified, concrete statement of behavioural goal.

There are again two parts of this poser: (i) How many children should attain a defined minimum standard (level)? and (ii) What should this standard be? Since it is a minimum standard, without which a desired functional goal can not be obtained, *all children must be helped to reach this level*. If the learning outcomes are measured, what percentage of scores be considered as minimum? To follow the convention and for the sake of simplicity, the range of 35-49% marks (scores) on a fairly reliable test is considered as a 'minimum' grade, 40-99% range as 'average' grade, 50-59% range as 'good', 60-79% range as 'excellent' and 80-100% range is considered as a 'mastery' grade or 'mastery' level learning. Thus, using the conceptual curriculum model discussed in this chapter, efforts have been made to formulate general objectives and define them further as MLOs in the following chapters.

Mention has been made of the conceptual and operational problems encountered in defining this concept. Special attention needs to be drawn to the fact that the quantum and preciseness in defining learning outcomes here vary from one subject to another, from one domain to another and, within a domain, from one objective to another. While it has been possible to achieve a high level of accuracy in laying down the quantum of content and formulating learning outcomes in respect of mathematics, the same is not evident in other subjects. It is also true that manipulative skills and cognitive objectives are more amenable to quantification than those relating to the affective domain. These handicaps will have to be kept in mind while going through this document.

2 CONTENT (C)

It may be seen that the content relevant to the objectives under each of the domains, has been described under Column II. As is evident, there exists a close relationship between objectives—behavioural outcomes and content. As a matter of fact, the statement of an objective/behavioural outcome has two important components, i.e., behaviour and content, these being the two sides of the same

coin. An example is cited below to show this relationship. The statement that “the learner recalls ” is incomplete without inserting “what he/she recalls”. Thus, a piece of content which may be letter of the alphabet, mathematical symbol, name of an animal, holding of a brush, an instrument, etc., is needed to fully complement a learning outcome. Even a statement of learning outcome as follows is still not adequate: He/she recalls the names of animals. One may further ask. In class I, the names of how many animals is a learner expected to recall? Surely, he/she is not expected to recall the names of all animals. When this aspect is concretely defined in terms of numbers, quantum, quality, etc., a clear definition of the MLO is obtained.

3. LEARNING EXPERIENCES (LEs)

Learning experiences are contrived by the use of combinations of stimulus modes and presentation media. A mode is the kind of stimulus presented to the learner. Thus, written symbols represent one mode, pictures another and so on. The vehicle carrying this mode is the medium. There are a variety of media available for presenting any given mode, e.g., books, posters, charts, models, films, video tapes, etc. Modes and media are used to bring home the content of instruction to the learner. Learning material is a combination of the stimulus mode, presentation medium and content.

A teacher is the central figure in the educational system. More often she/he herself/himself acts as a learning resource, indeed, as very rich one. He/she lectures, narrates, recites, dramatizes and organises question-answer sessions. He/she uses appropriate learning materials—charts, maps, models, audio tapes, films, video tapes, etc. The totality of all these interactions, communications and expositions results in an experience by the learner.

Under Column III in the Figure have been listed a number of teacher-pupil activities indicating involvement of learners with a variety of materials and audio-visual aids through different means/modes/methods/techniques. Provision of appropriate learning experiences to learners is the most crucial factor in the curriculum transaction, since learning has been defined in terms of changes generated in the behaviour or disposition or cognitive structures or socioemotional states of the learner. Interaction, communication, involvement and participation of both the teacher and the taught form the basis of the learning experience. *The quality of the learning experience ultimately determines the quality of development and attainment.*

It has been assumed that the teacher's role and intervention will be required more at the initial stages of learning and, hence, the teaching-learning activities will be more teacher dominated. Lest this statement be

misconstrued, it needs to be clarified that this does not surely mean a rigid, autocratic, stereotype execution of a set of learning tasks by the teacher. On the contrary, such interventions should be utilised for creating a conducive and warm climate for facilitating learning by young children, for they, indeed, require sustained help in mastering the basic competencies. Being in the early developmental stage, many of them, particularly the first generation learners, require a lot of guidance and assistance to overcome both initial learning difficulties and fear of failure, which happens to be aroused as a part of learning process itself. In a nut-shell, the instruction at this stage needs to be designed very carefully keeping in view the factors which influence learning and achievement such as age, genetic potential endowed in respect of different cognitive and socio-emotional traits, socio-cultural and economic factors, etc. It is also necessary to lay stress on the need for using play materials, games, toys, etc and the informal means and methods of presentation medium having potential for the children's maximum participation.

(a) GUIDING PRINCIPLES OF EFFICIENT INSTRUCTION

(i) *Behavioural Objectives.* The need for clearly defining objectives/learning outcomes in observable and measurable forms has been discussed at considerable length under "Objectives". Suffice to say that while writing a textbook or developing an aid, one should be fully aware of "what should and could be done by the learner".

(ii) *Step-by-step Learning.* Learning by nature is cumulative. The learner does not start every learning afresh. He/she usually takes off from where he/she has left. She/he brings the previous learning to her/his aid, when confronted with a subsequent or new learning. Thus, the quantum and quality of previous learning, to a great extent, affect the quantity and quality of the subsequent and/or new learning. For mastery learning, this principle of transfer of learning/training is of greater relevance, for poor attainment of previous learning results in still poorer attainment, which ultimately accumulates into acquiring a very small quantum and poor attainment of the total learning.

This strongly suggests that at a particular time and stage learning is efficient when it is done through well designed and graded small steps. Each step is presented to the learner when he/she is ready for it. Each step is required to be mastered before the learner proceeds to the next one. In this way, it is ensured that the learner does not miss any critical learning and is in a position to profit from it when an exercise of a new learning is undertaken. Even at the risk of being repetitious, it is necessary to emphasise the concept of "MASTERY" at this level. The research in the diagnostic testing amply demon-

strates that the insistence on mastery at every step helps in bridging the gaps or missing steps in learning.

(iii) *Empirical Validation of Steps.* Validation of learning steps ought to be done to determine the inadequacies in the instruction and to eliminate them by revising the steps. It is relatively easy to validate step-by-step instruction because the learner's progress can be checked continuously and correct responses can be immediately reinforced and strengthened until mastery over all the steps is ensured. If the learning steps were found defective, immediate remedial measures could be taken to modify them. Needless to say, every component of the gamut of the learning experience involved in the learning steps can be corrected/modified on the basis of feedback received from the learner.

4 EVALUATION

The NPE-86 and the NCERT Framework (1988) emphasise the need for continuously checking the total growth and development—physical, mental, social, emotional and spiritual—of the learner. It will be repeating the obvious if attention is drawn to the fact that the objective of evaluation at the early stage should be to mainly diagnose the learning difficulties and gaps/inadequacies of the learner and not to pass judgement on the performance of the learner. As the genesis of the taxonomical model was evaluation, it is reiterated that the objectives defined in terms of process-oriented and product-centred learning outcomes in Column I also become the criterion reference points for evaluating the quantum and magnitude of the development of the learner. It is assumed in the model that while "learning is a development-oriented process, achievement is an assessment-oriented process." Although they are the two sides of the same coin, their purposes are different.

Under Column IV, suggestions have been given as to how the development of the learner in respect of the learning outcomes under each domain should be assessed. The criterion has been a continuum varying from eliciting a verbatim reproduction to a unique production, using the learned elements in respect of the learning outcomes under the three domains. It is believed that when an answer/solution similar to the already learned ones is expected, the evidence for the development of lower level mental processes/products under the knowledge objective is sought for. If an utterly new answer/solution is desired, the evidence for the development of higher order mental-processes/products under the Creativity objective is sought. In between these two extremes of the continuum lie the expectations of the evidence for other learning outcomes comprising the objectives of Understanding/Comprehension and Application. As can be seen in the fourth column vertically, the nature of

(stimulus) question/problem varies from complete familiarity (known) to absolute unfamiliarity (unknown) (see Figure) More details in respect of each learning area have been provided in the following pages.

General Objectives

1. LANGUAGE—COMMUNICATION SKILLS

Objectives on communication skills given below are inter-related. In language, knowledge of vocabulary is basic. Therefore, all other objectives should be read and interpreted with reference to a child's knowledge of a number of words. For example, when it is stated that—'A child comprehends/appreciates/composes a passage of 20 lines or a poem, etc.', it is implied that the known words (vocabulary) have been used in these forms. Here all types of communications and/or forms of literature will be based on a learned vocabulary of 5000 words.

The learner should:

- Know about 5000 words in the first language which would generally be his/her mother tongue, out of which 2000 words should be an active vocabulary.

(a) LISTENING COMPREHENSION (LC)

- increase the span of attention and listening [1-15 minutes (auding)], receive incoming communications such as commands, instructions, directions, explanations, and information such as news on radio and television, etc.
- analyse and assimilate incoming communications in a variety of forms such as teacher's presentations, i.e., lectures, speeches, recitations, skits, narrations, poems, plays, essays, etc., using the known words and sentences/structures/patterns/usages learned.
- develop good listening habits and attitudes such as being attentive, reacting with appropriate gestures, postures, facial expressions, nodding, actively participating, while conversing.
- appreciate the beauty of one's own language when spoken with appropriate tone, pitch, intonation, emphasis, loudness, accent and balance.

(b) ORAL EXPRESSION (OE)

- reproduce accurately sounds of all single and combined letters; words, structures and phrases using the vocabulary learned.
- converse and discuss with peers, elders, strangers
- give directions, instructions, commands, explanations, recitations; make short introductions, speeches, announcements.

- participate in debates, discussions; play small roles, dramatise events, articulate, enunciate with correct pronunciation, using appropriate tone, pitch, emphasis, accent, loudness and feelings.

(c) LISTENING AND NOTE TAKING (LNT)

- grasp the most important points relevant for recall later from various incoming communications mentioned above.

(d) READING COMPREHENSION (RC)

- know printed visual symbols of language, viz., letters, words, punctuations
- understand literal and implied meaning of various written communications.
- develop coordination of eye movements from left to right or right to left (in the case of Urdu) to follow the printed symbols
- develop rapid reading with more power and efficiency, i.e., quicker word perception (mastery of sight vocabulary), word analysis, use of context and word-form clues, identification of meaningful units in words (word analysis), and dictionary skills
- analyse and assimilate informal written communications such as directions, instructions, guidance given at public places, viz., railway/bus stations, public offices, etc., notices, name plates, various kinds of items in the newspapers such as advertisements, news, etc.
- develop good habits of and attitudes towards reading literature in one's own language such as selecting good books as supplementary reading for leisure time from among many books available in the school/public libraries; buying good books if occasions or opportunities arise.
- appreciate the beauty of written forms of one's own language such as the use of appropriate words, different expressions, styles, etc.

(e) WRITTEN EXPRESSION (WE)

- develop coordination between eye movements and small muscles of the body, particularly of hands.
- re-write visual printed symbols, forms of letters, words and structures accurately, legibly and neatly.
- use meaningfully the known vocabulary in short compositions, like descriptions of things and objects around, narrations of incidents, events, simple compositions, reports, subject notes of topics taught, stories, couplets, poems, skits, plays, travelogues and essays. (Write a prose passage of about 500-1000 words in 30 minutes).
- appreciate materials printed in different styles using

types with different size, shape and format

2. CONCEPTS, SKILLS AND APPLICATION IN MATHEMATICS

(a) NUMBER SYSTEM AND NUMERATION

- know and understand numbers and numerals up to 99,00,00,000 (ninety-nine crore).
- know and understand place value of a digit in a numeral up to 99,00,00,000 (ninety-nine crore)
- use decimals through .000s

(b) COMPUTATION SKILLS AND APPLICATIONS

- know basic addition and subtraction operations.
- develop skills in addition, subtraction, multiplication and division in respect of whole numbers (the sum not to exceed 99 99 999 in the case of addition and subtraction, product/dividend not to exceed 99 99 999 and multiplier/divisor not to exceed 999 in the case of multiplication and division respectively) and in respect of fractional numbers expressed as fractions and decimals.
- develop concepts and apply computational skills acquired in respect of whole numbers and in respect of fractional numbers expressed as fractions and decimals in the area of measurement, viz , length, mass, capacity, area, volume, time, money and temperature.
- understand relationships among various two and three dimensional shapes; and their properties.
- develop the concept of percentage and use symbol % and related skills of computation.
- solve quantitative problems related to real life situations by making use of concepts and skills relating to numbers, measures and mathematical relationships
- develop good working habits such as accuracy in performing arithmetical operations, systematic and orderly approach to solving problems, and mastering every operation of the task at hand
- express a desire for acquiring further mathematics knowledge
- enjoy dealing with numbers and solving puzzles and participate in various forms of recreational mathematics
- appreciate the importance and application of mathematics in solving problems in science and in day-to-day real life situations

3. ENVIRONMENTAL STUDIES (SCIENCE AND SOCIAL STUDIES)

- know basic facts and information about the immediate social and natural environment such as differ-

MINIMUM LEVELS OF LEARNING AT THE PRIMARY STAGE

- ent people, institutions, means of transport and communication, flora and fauna, natural resources
- understand the process or origin of happenings/ events taking place in the world around.
- develop norms and modes of behaviour that are consistent with the values enshrined in the Constitution of the country such as the democratic way of life, national identity, equal rights and responsibilities, respect for other's religion and ways of life, concern for others, cooperation
- understand India's rich cultural heritage which is essentially a mixture of many races and people.
- appreciate cultural and ethnic similarities and differences and diversities, contributions made by Indians belonging to each of the regions, races and speaking different languages
- know basic facts and information about the human body and its growth and development.
- understand the functions of various parts of the human body
- understand the need for keeping the body and environment clean, healthy and disease-free, particularly those which are area-specific
- develop good and healthy habits for improving one's own quality of life such as maintenance of personal health, care of the eyes, ears, nose, teeth, etc. for prevention and control of accidents and disabilities.
- appreciate the interdependence of man and nature—flora and fauna and, therefore, the need for protecting and conserving the environment
- know the basic facts and understand the basic concepts of science through the environment.
- perform experiments to verify underlying principles, processes and methods of science
- apply the knowledge and concepts, principles, processes, methods learned to solve academic and day-to-day life problems for improving the quality of life of the individual, the family and the community.
- develop interest in and appreciation of contributions that science and technology have made to improve life
- develop attitudes and values such as objectivity, precision, critical thinking, goal-directedness, etc.

4. WORK EXPERIENCE (W Exp)

- be familiar with and aware of various work situations, elementary processes of work/productive activities and problems existing in the community/environment
- make small repairs, fix things, decorate, beautify the surroundings.
- handle various simple tools required for making small articles of day-to-day use, from locally available materials; tools and equipment required for

tasks such as cutting, pasting, digging, sowing, watering, etc

- maintain a kit of tools and equipment required for making small repairs/things in home and school.
- appreciate manual work and have regard for those workers in the community who produce goods and/or provide useful services to the community
- perform small tasks assigned or undertaken with accuracy and perfection
- develop values such as regularity, punctuality, cooperation, comradeship, perseverance and honesty

5 CREATIVE ARTS (CA)

- show willingness to receive, understand and appreciate the artistic expressions existing in the community and environment
- appreciate various forms of folk arts, music, dance and drama, or those rendered by others, express freely through simple forms of arts—plastic and performing ones

(a) MUSIC, DRAMA, DANCE AND RHYTHM

- listen to, and appreciate various musical performances such as chantings, devotional songs (bhajans), songs, and those delivered through different instruments, namely, flute, harmonium (wind), sitar, veena (string), tabla or mridung (percussion), etc
- participate in performing arts through simple forms such as rhythmic activities, role plays, folk dance, roles in plays, singing songs, especially those which help in developing patriotism, national identity and integration

(b) ARTS AND CRAFTS

- manipulate several kinds of materials, especially waste materials, to create a variety of forms or things—two and three dimensional ones
- appreciate art and craft objects prepared/produced by the local artisans and artists

- develop pride for the Indian cultural heritage reflected in arts and crafts

6. HEALTH—PHYSICAL EDUCATION (PHE)

- develop proper use of the body, i.e., control and coordinate various parts, and big and small muscles of the body for facile locomotion and acquisition of playing skills
- develop strength, stamina, speed, balance, coordination, endurance and grace appropriate to his/her age-group.
- participate in all games as a member, but acquire proficiency in playing at least two games
- participate in all sports events as an individual, but acquire proficiency in any two events of his/her choice
- know and understand the Indian and International games and sports so that he/she is able to enjoy watching them
- develop values such as team spirit, cooperation, healthy competitiveness, tolerance, etc

Scheme of Studies and Time Allocation

The Minimum Levels of Learning (MLL) at the end of the primary stage will be realised through the MLOs and content of subjects spelled out in this document. As highlighted in the NCERT Framework, the common scheme of studies is one of the most important parts of the National System of Education, specially in the context of common core components. The scheme of studies outlined in the Framework has been used as a frame of reference in defining MLOs and selection of content, in general or related to common core components. The scheme and time allocation for each week are given below as reference. It may be recalled that two hundred working days per year have been recommended for achieving the MLOs for each class. It has been further recommended that four out of five hours should be available for instructional work (4 hrs. x 6 days = 24 hrs a week)

Sl.No	Subject	Percent	Weekly Hrs.
1	One Language: Mother Tongue or Regional Language	30%	7.2
2.	Mathematics	15%	3.6
3.	Environmental Studies	15%	3.6
4.	Work Experience	20%	4.8
5	Art Education	10%	2.4
6.	Health & Physical Education	10%	2.4
Total		100%	24/30

FIGURE 1
CONCEPTUAL CURRICULUM MODEL

Objectives (Os) [Expected Behavioural Outcomes (EBOs)]	Content (C)	Learning Experiences(LEs) Teacher Activities	Evaluation Real Learning Outcomes (RLOs)
COGNITIVE DOMAIN			
1. KNOWLEDGE (K)			
Recognition/ Identification	Facts Figures • Symbols	Lecture Narration Recitation	Observing Listening Taking Notes
Recall/Recollection	Letters Words Phrases Structures	Dramatisation Showing Charts Explanation Film Show Programmed Instruction	Reading Speaking Play activities with toys, blocks, puzzles, games and other relevant material/equipment
		One-Way Communication	
			Problems/Questions using known objects, things, play materials, equipment, etc Repetition of questions raised, problems solved, explanations given, theories presented during teaching.
2. COMPREHENSION/UNDERSTANDING (C/U)			
Seeing relationship Citing examples Discrimination Classification Interpretation Verification Generalisation	Ideas Concepts Themes Situations Principles Functions Laws	Guiding Prompting Suggesting Discussing Questioning Feedback Demonstration-cum-discussion Problem solving	Identification of known elements, facts, principles. Finding out interrelationships among them Devising similar experiments, demonstrations, etc. Deriving common underlying principles. Playing/interacting with peers, using toys, blocks, puzzles, games and other relevant material/equipment. Posing a problematic situation, be it in the form of objects, things, play materials, equipment, experiments, machines, passages, etc which, though unfamiliar, contain the same facts, principles, ideas, etc., already learned.

Two-Way Communication
Teacher-Pupil Interaction / Pupil-Pupil Interaction

Objectives (Os)	Content (C)	Learning Experiences(LEs) Teacher Activities	Pupil Activities	Evaluation
3. APPLICATION (A)				
Reasoning Formulating hypothesis Establishing hypothesis Inference Prediction	Natural or contrived Problematic, essentially unfamiliar (novel) situations derived from the specific content already learnt at K and C/U levels	Presentation of an unfamiliar problem, a machine, a system or an experiment. Problem solving Supervised laboratory work Tutorials	Identification of old familiar learning-elements, facts, methods, modes, etc. Interacting, with the models materials, equipment, etc. Making intelligent guesses about probable relationship Developing procedures to test formulated relationship. Observing, collecting, analysing data, making inferences Deriving consequences, conclusions, implications.	Again, an unfamiliar situation, object, thing, play material, equipment, etc., related to previous learning to be given
4 CREATIVITY (CRE)				
Analysis Synthesis Judging	Natural or devised problematic, essentially unfamiliar (novel) situations, derived from a specific content already learnt under K, U & A.	Presentation of problem, unfamiliar, of course, which is still being explored Programmed instruction Individualised worksheets Tutorials Projects	Analysis of this into small components, i.e., separation of known and unknown elements, principles, processes, methods (or even theoretical aspects) Identification of known and unknown components, etc. Stating probable relationships. Rejecting many which do not seem feasible on the basis of criteria derived from existing theoretical structures, arrangements, configurations, theories, etc.	Different objects, things, play materials, equipment, situations, theoretical structures, probably contradicting the one students have seen/learnt/ developed, may be given as problems. Again, a sequence of questions presented for answers.
<div> Multi-Way Communication Teacher-Pupil Interaction / Pupil-Pupil Interaction </div>				
<div> Multi-Way Communication Teacher-Pupil Interaction / Pupil-Pupil Interaction </div>				

Objectives (Os)	Content (C)	Teacher Activities	Learning Experiences(LEs) Pupil Activities	Evaluation
PSYCHOMOTOR DOMAIN				
5 MANIPULATIVE (MOTOR) SKILLS (MP-SK)				
Performance with	Analysis of tasks to be performed	Demonstration	Listening	Performance on similar tasks, gradually on unfamiliar tasks
- Correctness (errorless)		Charts	Observing	
- Accuracy		Slides	Speaking	
- Speed		Film shows	Reading	
- Coordination			Performing	
- Productivity				
AFFECTIVE DOMAIN				
6. INTERESTS (I) APPRECIATION (Apr) ATTITUDES (Att) VALUES (V)				
General and special to subjects	Supplementary language material	Dramatisation	Planning	Collection of incidents anecdotes etc mainly in informal situations all round the year in and outside the classroom, continuous but collective ratings by all who are in touch with the children
(Characteristic and specific behavioural outcomes that could be listed here are not only innumerable but also controversial.	particularly themes exposing such attitudes and values	Field trips	Collecting required information	Evaluating contribution of the group and individual
MLOs relating to Common Core	Significant national events or episodes from the lives of great personalities, writers, scientists, philosophers,	Excursions	Division and execution of responsibilities	
Components have been listed for every learning area)	political leaders, etc Common Core Components have been elaborated under each learning area	Film shows		

CHAPTER 3

MINIMUM LEARNING OUTCOMES AND CONTENT FOR TEACHING THE FIRST LANGUAGE

Communication Skills

As already indicated in the preceding chapter, the teaching-learning of language helps in developing communication skills such as Listening Comprehension (LC), Oral Expression (OE), Listening and Note-taking (LNT), Reading Comprehension and Written Expression (WE).

At the outset, it is necessary to recognize that *Listening Comprehension (LC)* and *Oral Expression (OE)* are the two sides of the same coin. They are not only mutually dependent but also reinforcing, i.e., listening, as differentiated from hearing, is a process of *receiving*, and speaking is a process of *responding* to what has been received. Thus, in the absence of reliable feedback in the form of oral responses from the listener, it is rather difficult to assess the listening comprehension of children. Obviously they need to be treated as inter-related skills.

Before entering the school, the child has lived mostly in the world of sounds. The main modes of her/his *communication* have been gesturing, listening and speaking. In the school, organised efforts are made to relate sound symbols to printed visual symbols. Hence, this is the most crucial stage of transition from the world of sounds to the world of visuals. Extra care needs to be taken to facilitate smooth transition and strong linking between listening and reading. Since a substantial number of first generation learners speak sub-regional version(s) or dialect(s), they need to be helped not only to relate the standard sounds and visual symbols but also the sound symbols of their sub-regional version(s) or dialect(s) to those of the standard regional/state language first, and then move on to the second stage of linkage between sounds and visual perceptions.

Unfortunately, the listening (audio), speaking (oral responses) aspects of communication remain substantially unattended, if not totally ignored or altogether neglected by teachers. There is a dire need to improve both *marginal or casual, and attentive or concentrated listening levels of children*.

Entry Level Attainment in Language

Although the evidence in the Indian research on *the oral* vocabulary is neither adequate nor conclusive, it indicates that a child entering class I, or at the age of six, pos-

sesses a vocabulary of 1000-1500 words. He/she is able to recognize, recall, reproduce and distinguish among the sounds of letters and words known and is able to use about 300-500 words (active vocabulary) in an oral narration of various themes/situations or in describing things/objects around. He/she can also recite/sing small poems, songs and rhymes.

Content

While devising the content of the language, it must be kept in view that learning experiences are organised according to the needs of the children and the local specific situations. Efforts must be made to arrange them in such a way that they help in achieving the learning outcomes common for all learners at the primary stage of education. Therefore, it is essential that the curriculum framers make a judicious selection of representative situations most commonly met by an individual. It is not necessary that the learning situations should be uniform. There should be flexibility in designing the learning situations, which will enable him/her to include all varieties and styles of language items to be mastered. The selection of content may be thematic and derived from all walks of life.

In the selection of content and organisation of learning experiences, special emphasis needs to be laid on the common core components of the curriculum, as given in the NPE 1986. The instructional materials may include lessons connected with core components common for all the learners eg. biographies of national leaders and heroes, and freedom fighters.

Teaching-Learning Strategies

While developing lessons and writing textual material special care is needed regarding the vocabulary of the children. The lessons should be developed carefully in a graded manner from one class to another. In the early years of learning language, children may not be expected to use the standard language but the approach must be such as eventually helps develop an insight and mastery to use the standard language. The teacher should have freedom to take initiative and use innovative practices in the teaching-learning situations. The learning

experiences should provide sufficient practice in the art of listening, speaking, reading, writing and creativity. In classes I and II, more weightage should be given to development of oral skills. As the learners move to the higher classes, there should be more scope for developing the skills of expression and creativity. For example, the textual instructional material developed for classes I, II and III may be very simple in nature, describing concrete events, facts and situations, while the text used in classes IV and V should be more complex in nature. In other words, children of these classes have to learn to manipulate the same language skills in a more complex context. Thus, the content and learning outcomes included in the syllabi of each class should be of a more complex nature as compared to the previous class. While determining the teaching-learning strategies to achieve the Minimum Learning Outcomes, the mental maturity, needs and entry behaviour of the students should be important considerations.

In view of the above the teacher should form two major groups of children as follows—one of classes I and II and other of classes III to V.

At the level of group one, i.e., classes I and II more emphasis is to be laid on strengthening and improving the use of oral language by pupils. Therefore, teaching—learning activities should involve more of listening and oral expression on the part of the students. The teacher should give ample practice in pronunciation drills, recitation of poems, role play of family members, characters in a story or people in the community, etc.

As far as the learning of reading and writing skills in these classes is concerned, the pupils should be involved in activities promoting visual and audial discrimination required for recognizing letters and associating sounds with them, acquiring coordination of the muscles of the hands and arms, and movement of the eyes. Intensive practice of the oral expression should be the keynote of teaching-learning activities in these classes.

In classes III to V, the children are required to learn the use of oral language in more formal situations with ease and poise. To achieve this goal, activities like group discussions, debates, dramatization of stories, etc. may be organised, where the students are required to demonstrate social courtesies such as address and thank the audience, acknowledge introductions, express their ideas and arguments in a socially accepted manner. Apart from oral expression, reading and writing also become equally important in these classes. The pupils should be encouraged to read not only text books but other supplementary materials also for information as well as enjoyment. They should be encouraged to give their opinion on the content read. They should be given opportunities to express their ideas. Intensive practice in writing should be given by making them write reports of field visits, ans-

wers to questions based on the text, applications in various contexts—essays, paragraphs, etc.

Evaluation

The curriculum planning process should result in statements of objectives and MLOs which can influence the appraisal of pupil progress. First, overall planning should determine major objectives sought through curriculum planning. These objectives are the basic guides or criteria for appraising pupil progress at all levels. Second, the planning for the scope and sequencing of the curriculum should result in identification of some learning outcomes to be emphasized at particular levels. Teachers may use these selected learning outcomes as criteria for appraising the progress of their pupils. For example, overall planning might identify 'to help development of communication skills' as a major objectives of language curriculum at primary stage and suggest more emphasis to be laid on skills of oral expression and reading.

Effective use of language is a objective which cannot be achieved overnight. This ability is developed gradually. Continuous evaluation of students' progress at short intervals, followed by appropriate remedial work should be the hallmark of evaluation. The traditional method of appraisal—the written test is only one of the many ways of collecting evidence regarding pupil behaviour but is actually the most unreliable with respect to assessment of many types of behaviour. There can be many other techniques for getting data about the behaviour of learners. For example, observation of pupils in various situations may determine behaviour of a specific nature. The pupil presents numerous kinds of evidences of his/her achievements of MLOs in different situations. He/she converses with peers/friends during school hours. Observation of the pupil's use of language skills in his/her day-to-day life at school yields far more reliable, valid and meaningful information about his/her progress than any formal test.

Similarly, the teacher may use performance tests which include creative work, group discussion, debate, recitation of poems, etc. By giving the pupil practice in reading, the teacher can know the progress made in his/her reading ability. Daily assignments of transcription or dictation may show the progress in writing skill. The teacher should keep a record of the pupil's progress. This record should cover various aspects as achievement in academic subjects, attendance, discipline, participation in activities involving discussion, listening and oral expression, reading and writing skills, etc.

To determine the progress of a skill, it is necessary to have an initial measure of performance and one or more subsequent measures. Some norm of expected progress should be set. Evaluation of pupil achievement in

classes I and II should be entirely on the basis of observation. There should be a systematic and regular record of the teacher's observation. In fact, in the primary classes it is far more important to keep a systematic and regular record of the teachers' assessment of pupil progress and to ensure remedial teaching than to hold formal tests.

Another important thing to be remembered is the mechanics of language skills. Mastery over mechanical skills involved in the act of speaking, reading and writing is a pre-requisite for the development of reading comprehension and oral and written expression. Unless a student has developed mastery of recognition of the letters of the alphabet, correct writing of these letters, correct spellings and correct pronunciation of words, he/she cannot enter in any kind of proper communication. It should, therefore, be imperative for each student to master these skills and unless this mastery is achieved, the process of teaching-evaluation-reteaching of these should be continued.

As far as evaluation of students' comprehension competencies is concerned, it should be appreciated that in the language class, the text is used as a means to develop Minimum Learning Outcomes. Selected extra-textual material should be used to collect valid evidences of students' ability to read, comprehend and appreciate. Similarly, writing assignments, involving his/her personal experiences, feelings and ideas can provide a better measure of his/her ability to write correctly and effectively.

Time Allocation

The National Curriculum for Elementary and Secondary Education—A Framework (Revised Version, 1988) has recommended that at least 200 days in a year should be available for effective instruction. A primary school should function for five hours out of which four hours a day should be available for instructional work. Converted into 40-minute class periods, this gives six class periods per day, i.e., 4 hours X 60 minutes = 240/40 = 6 periods. It has been recommended that about 30% of the total instructional time be devoted to language at this stage. Thus in terms of 30% of time, about two periods a day will be available to the teacher for developing communication skills. It is necessary that a teacher devotes on an average at least 20 minutes to oral presentation and subsequent practice of spoken expression by each and every child.

The above presentation should not be interpreted to mean that a rigid allocation of time for different curriculum areas in the school time-table is being suggested. On the contrary, in classes I–II, flexibility should be the rule of thumb and the teacher should freely organise a given period, dividing children into various groups according to their needs, ability, attainment and convenience. Child-to-child interactions and learning should be encouraged as far as possible.

THE FIRST LANGUAGE (MOTHER TONGUE—HINDI)

CLASSES I & II

Minimum Learning Outcomes

Content

LISTENING COMPREHENSION AND ORAL EXPRESSION

The learner should

- recognise and recall all sounds of his/her language
- discriminate among different sounds of his/her language
- recognise and recall about 2500 spoken words.

All the sounds of his/her language

A vocabulary of 2500 (1500 acquired + 1000 new) words related to day-to-day needs and experiences.

(a) Parts of body, days, months animals, birds, trees, flowers found in the immediate environment

(b) Objects of nature such as the sun, the moon, rivers etc

(c) People from different walks of life e.g. postman, milkman etc

(d) Means of transport such as bicycle, tonga, bus, rickshaw, aeroplane, train etc

- (e) Objects of daily use and experiences related to food clothing, family life, play, outdoor activities etc
- (f) Feelings and emotions like happiness, anger, behaviours like laughing, crying etc.

- discriminate between the meanings of different words of his/her spoken vocabulary.
- respond to the speaker with appropriate gesture, expressions e.g. smile, nod etc.
- follow simple instructions.
- locate the main idea of a simple short story, a play, a conversation or narration
- pronounce correctly all the words of his spoken vocabulary
- use appropriate words in his/her spoken communications.
- use grammatically correct language in his speech
- speak politely
- recite poems with correct pronunciation, proper intonation, stress and facial expression
- narrate events, stories, etc, giving all important details in a proper sequence
- converse with peers, teachers, family members and neighbours with ease and proper manners.
- give proper arguments, reasons, citing examples etc while talking with others.
- draw logical inferences from simple facts.
- practice oral courtesies in informal situations.

Poems, songs related to objects in the immediate and natural environment

Courteous words denoting expressions like thank you, please, excuse me, etc.

READING COMPREHENSION

- associate sounds with graphemes (letters and the symbols) of the alphabet of his/her language.
- recognize all the graphemes (letters and other symbols if any) of alphabets of his/her language
- distinguish between the graphemes having similar shapes or denoting similar sounds

All graphemes of the alphabets used for the concerned language; these will include letters, their primary and secondary forms, other symbols like 'matras', 'anuswer' etc. in the case of Hindi,

A vocabulary of 800 new words.

- recognise words of his/her reading vocabulary with appropriate speed.
- read with proper posture and correct eye movement.
- read aloud words and sentences with appropriate speed
- read aloud simple connected sentences, stories, narrations, etc
 - Short stories, poems and other textual material related to
 - (a) animals, birds, members of the family and community, fairs and festivals, games and sports, health, hygiene and cleanliness, fantasy etc ,
 - (b) acts of bravery, truthfulness, honesty, hard work, co-operation etc
 - (c) picture stories
 - (d) road signs, notice boards, posters etc
- read aloud poems with appropriate pitch, intonation, stress and fluency
- infer contextual meanings of the new simple words
- recall facts, ideas, events etc. of the read material
- see the relationship among various facts, ideas, events etc contained in the read material
- identify the main points of the read material.
- draw simple inferences from the read material

COMMON CORE COMPONENTS

Note Common core components relating to listening, speaking and reading have been given below.

THE HISTORY OF INDIA'S FREEDOM MOVEMENT

Names of eminent freedom fighters, e g , Mahatma Gandhi, Bal Gangadhar Tilak, Gokhale, Jawahar Lal Nehru

NATIONAL IDENTITY

Names of national festivals, i.e Republic Day, Independence Day, Gandhi-Jayanti. Brief description of these festivals.

Names of local festivals such as Diwali, Holi, Id-ul-fitr, Pongal, Onam, etc

Poems like 'Sare Jahan se Acchha'.

National anthem

Different places of worship like church, mosque, gurdawara, mandir

Names of historical monuments like Red Fort, Chittargarh Fort, Srirangapatnam, Taj Mahel, etc.

PROTECTION OF THE ENVIRONMENT

Names of trees and plants found in the immediate environment; importance of plants, water, animals and their interdependence; interdependence of human beings and environment and cleanliness of the environment

SMALL FAMILY NORM

The size of the families big and small families.

WRITTEN EXPRESSION

- hold pen/pencil correctly and write with proper posture
- write letters and words in proper formation

All the graphemes used for his/her language e.g. in English, capital and small letters, in Hindi primary and secondary forms of letters, 'matras', 'anuswar', etc
- write neatly, legibly with correct spellings

Words comprising various graphemes used for his/her language
- reproduce in writing a few sentences about familiar objects, animals, etc (class I)
- write a few connected sentences on his/her own (class II)

Main rules of orthography of language

An active vocabulary of 320 words

CLASS III

LISTENING COMPREHENSION AND ORAL EXPRESSION

- recognise and recall about 4000 words

A list of about 3250 words (2500 acquired + 750 new) related to. (a) animals, birds, health, hygiene, nutrition, places etc
(b) Means of transport, life styles of people of different States
- pronounce correctly all the 3250 words of his/her vocabulary.
- follow instructions involving two-three actions to be performed in a prescribed sequence
- identify central theme of a story, a play, conversation a narration, etc

Write-ups, stories, one-act plays, narrations, conversations etc. related to above mentioned topics.
- describe in simple words and a sequential order what is heard or observed
- see relationship among different facts, ideas, events, etc contained in a story, narration, a play, conversation etc.
- draw inferences about the people, things and events observed or heard about.
- give relevant answers in a few sentences to questions related to a story, a narration heard or incident observed.
- cite examples of nouns, pronouns, adjectives, etc.

- use the vocabulary learnt with correct pronunciation while speaking.
- use the standard form of language in speech
- practice oral courtesies in different social situations Expressions like 'Thank you' 'I beg your pardon' 'Please' 'Shrimanji' 'Excuse me' etc
- converse with peers and elders with ease, appropriate manners and politeness.
- recite poems, sing songs with proper intonation, stress and fluency. Action songs; Poems on patriotism, objects from nature, pets, etc

READING COMPREHENSION

- read correctly words comprising single as well as joint letters. A reading vocabulary of about 1800 (800 acquired + 1000 new) words, denoting antonyms, synonyms, pair of words, words expressing sounds, tastes, smells, objects, games, animals, birds, ideas, feelings, values, inventions, technical terms etc
- recognise about 1800 frequently used words and idioms. Stories related to events, peoples, animals, birds, etc from distant lands and different periods, from ones own community and country, values of honesty, truthfulness, co-operation, hard-work, bravery etc.
- recall the meaning of new words and sentences comprising them. Folk stories, fairy tales, descriptions of animals, birds, trees, etc; descriptions on
 - (a) development works in the country, in one's own state, district, block, village, etc
 - (b) health, hygiene, nutrition
 - (c) games and sports
 - (d) fairs, circus, zoo.
 - (e) means of transport and communication
 - (f) people from different parts of the country, their life-styles, language, dress, festivals, etc
 - (g) poems on birds, butterfly, flowers, moon, sun, village life, etc
- infer the contextual meanings of words and usages.
- see relationship among facts, ideas and events described in stories, narrations etc
- draw simple inferences
- compare the facts and events
- cite examples of behaviours, facts and events.

WRITTEN EXPRESSION

- write a few connected sentences with proper letter formation, spacing, alignment, slant, and relative size. A vocabulary of 720 words (320 acquired and 400 new). Ideas, facts, feelings expressed in stories, poems, narrations included in the reading material.

- write grammatically correct sentences Experiences and events of day-to-day life
- write words with correct spellings
- reproduce an event, or a simple story in a few connected sentences correctly.
- express himself/herself in writing coherently.
- use relevant facts, inferences and ideas in writing.
- use appropriate vocabulary while writing.
- write short essays or paragraphs on topics of interest, familiar objects, places or pet animals, etc
- write application for leave and informal letters to friends and family members.
- use appropriate format of the essay, letter, paragraph Simple essays, paragraphs, letters etc

COMMON CORE COMPONENTS

Note Common Core Components relating to listening, speaking, reading as well as writing have been given below

THE HISTORY OF INDIA'S FREEDOM MOVEMENT

- Biographies of and stories related to Pandit Nehru, Gandhiji, Rani Lakshmi Bai, Subhash Chandra Bose, Maulana Azad, Dr Rajendra Prasad, and local heroes
- Life stories of people involved in the struggle for freedom and their contribution.
- Local events related to struggle for freedom, burning of foreign made goods, death sentences to Sardar Bhagat Singh etc.
- Monuments and places of national importance like Sabarmati Ashram, Residency at Lucknow.
- Patriotic poems; National emblem and symbols

INDIA'S COMMON CULTURAL HERITAGE

- Festivals of Holi, Diwali, Pongal etc, Life styles of people of different regions and their cultural patterns; Names, life stories and events related to the Indian history Akbar, Ashoka, Shivaji; Significant episodes from epics.
- Developmental works like dams, factories, eg Bhakra Nangal, Durgapur etc

EQUALITY OF SEXES

Life stories of eminent women of the country such as Kastur Ba, Sarojini Naidu, Rani Laxmibai, etc.

PROTECTION OF THE ENVIRONMENT

- Natural resource like forests, minerals, etc. and their conservation

CLASS IV

LISTENING COMPREHENSION AND ORAL EXPRESSION

- recognise and recall the meanings of new words of his/her vocabulary
 - A total vocabulary of 4000 (3250 acquired + 750 new) words
 - About 750 new words related to stories, plays, narrations, write-ups etc on different topics, themes, etc e.g.
 - (a) bravery, honesty, birds, animals, games
 - (b) important cities of the country
 - (c) industries, dams, factories, etc.
 - (d) new inventions
 - (e) modern means of transport and communication
 - (f) topics of local and regional relevance and importance
- pronounce correctly all the words of his/her vocabulary.
- speak in standard form of his language
- converse with newly acquainted persons and strangers with ease and in appropriate manner
 - Personal experiences, conversations, etc
- practice oral courtesies in various situations like thanking, welcoming, bidding farewell to guests, etc.
- tell stories, play roles, narrate events in the class.
- express orally his/her thoughts/feelings clearly
- give logical and precise answers to questions on what is observed, heard or read.
 - Objects and events observed or read about
- take part in drama etc and express appropriately while playing small roles.
- participate actively in class discussions on given topics
- cite appropriate illustrations and give relevant arguments to support his/her point of view.

READING COMPREHENSION

- recognise all the new words of his vocabulary with appropriate speed
 - A sight vocabulary of about 3200 (1800 acquired + 1400 new) words
 - Textual material containing, poems, stories, short essays, dialogues, plays, etc on topics of interest, e.g , animals, birds, trees, plants, developmental projects, events, problems, natural phenomena, etc
- recall antonyms, synonyms, suffixes, prefixes, etc from his/her vocabulary.
 - Write-ups about
 - (a) important cities, vegetation, industries, occupations
 - (b) fairs and festivals,
 - (c) modern means of transport and communications

(d) life of children in distant countries, their food, shelter, traditions, language, occupations, festivals, etc.

- identify different grammatical categories e.g gender, number, nouns, pronouns, adjective, verbs, etc.
- read aloud with correct pronunciation, with proper pauses, intonation, stress etc.
- read silently with appropriate speed
- select a variety of reading materials for information and enjoyment Comics, Magazines, Story-books, Newspapers, etc.
- identify the main points of the content of the text simple literary stories retold.
- analyse the main ideas of the reading material.
- relate with each other ideas, facts and events of the material read.
- cite examples to illustrate the ideas contained in the reading material
- evaluate the events and characters. Poems on nature, bravery, patriotism etc.
Personal notes and letters.
- read handwritten letters, handwriting of classmates, teachers
- read on his own books and materials other than text
- select reading material of his/her own choice

WRITTEN EXPRESSION

- write legibly and neatly with reasonable speed An active vocabulary of 1280 (720 acquired + 560 new words)
Short answers to the questions based on the text.
- write with correct spellings
- use appropriate words, idioms, usages, grammatical forms and punctuation marks
- reproduce a short simple story, a narration of a description in his/her own words.
- write applications, letters, brief personal notes application to the headmaster, personal letters, etc.
antonyms, synonyms, suffixes, prefixes, singular, plural, genders.

- write small essays on familiar objects, places or things short simple paragraphs, essays on familiar topics, events heard, observed or imagined personal experiences.
- express himself/herself in writing coherently and relevantly.

COMMON CORE COMPONENTS

Note: Common Core Components relating to all the four language skills have been together

THE HISTORY OF INDIA'S FREEDOM MOVEMENT

- Life stories of local heroes, Sarojini Naidu, Sardar Patel, Annie Beasant etc
- Descriptions and write-ups related to
 - (a) Events like Dandi March, Satyagrah movement, tragedy of Jallianwala Bagh, local and regional events related to struggle for freedom.
 - (b) monuments and places of national importance like Raj Ghat, Shantivan, Aanad Bhavan, Cellular Jail at Andaman Nicobar etc

NATIONAL IDENTITY

- Poems conveying the message of unity and oneness.
- Life of the people in various parts of the country
- Festivals of different communities e.g. Ramdan, Pongal, Janamastami etc.
- Life stories and teaching of great men, saints and social reformers like Hazrat Muhammad, Budha, Guru Nanak, etc.

INDIA'S COMMON CULTURAL HERITAGE

- Names, life stories and events related to cultural heritage, e.g., Ashok, Prithviraj, Akbar, battle of Haldi Ghati, effect of Kalinga war on Ashoka, etc
- Names of different dances of India and their exponents
- Names of tribal dances
- Names of and facts about people like Jagdish Chander Basu, Arya Bhatta, C V. Raman, Tansen, Ravi Shankar, Sunil Gavaskar, P.T Usha, etc
- Simple facts and principle underlying democracy, i.e., right to vote, meaning of vote, Govt. of the people, by the people and for the people.
- Principle of basic similarities and oneness in different religions of the country
- Respect for all the religions
- Life stories and events related to women like Razia Sultana, Durgawati, Meera Bai, Jijabai, Kasturba, etc
- Social reformers like Dayanand Saraswati, Raja Ram Mohan Rai, etc.
- Writers like Prem Chand, Sharat Chandra, Tenali Ram, etc.
- Poets like Subramanian Bharati, Ravindra Nath Tagore, Tulsi, Kabir, etc

PROTECTION OF THE ENVIRONMENT

- Importance of trees and plants for national development, Chipko Andolan, national parks, etc
- Natural resources of the country e.g. minerals, forests, rivers etc.

CLASS V

LISTENING COMPREHENSION AND ORAL EXPRESSION

- | | |
|--|---|
| <ul style="list-style-type: none"> – recognise and recall 5000 words | <p>A total vocabulary of 5000 words</p> |
| <ul style="list-style-type: none"> – pronounce accurately all the words of his vocabulary. | <p>Vocabulary comprising words formed by using pre-fix-suffix, sandhi, Sammas, denoting antonyms, synonyms, pairs of words etc.</p> |
| <ul style="list-style-type: none"> – describe accurately personal experiences | <p>Idioms, usages, phrases, etc Plays, Stories with 4-5-characters</p> <p>Narrations, descriptions, speeches, lectures, discussions.</p> <p>Health, hygiene, nutrition, games, sports and other themes of local relevance and personal interests.</p> <p>Local news, programmes on T V. and radio.</p> <p>Incidents, events, etc witnessed or heard about</p> <p>Expressions like 'Excuse me', 'I beg your pardon', 'Please take your seat', etc.</p> |
| <ul style="list-style-type: none"> – use standard form of his/her language in his/her speech | |
| <ul style="list-style-type: none"> – use appropriate vocabulary in his/her speech: | |
| <ul style="list-style-type: none"> – recall different character of a story, play or narration | |
| <ul style="list-style-type: none"> – recall news items heard on radio or T V | |
| <ul style="list-style-type: none"> – recall sequence of events. | |
| <ul style="list-style-type: none"> – draw inferences from a story, play, speech, narration and local news. | |
| <ul style="list-style-type: none"> – evaluate and give his/her opinion about the facts, ideas, arguments and processes described in a speech or a text. | |
| <ul style="list-style-type: none"> – participate in various cultural programmes organised in the school, i e., various musical performances, devotional (bhajan) songs, poems | |
| <ul style="list-style-type: none"> – discuss merits of a particular content, text or narration | |
| <ul style="list-style-type: none"> – use vocabulary appropriate to the situation while participating in a discussion or communicating with others | |
| <ul style="list-style-type: none"> – converse fluently and naturally in socially acceptable language and manner in various social situations. | |

- practice oral courtesies in different social situations
- make announcements and give directions with clarity
- speak intelligibly, ask questions, report events etc
- narrate simple experiences and events in proper sequence
- participate in debates and discussions logically and effectively and express orally his/her thoughts, feelings and opinions
- recite poems, sing songs and give short speeches with appropriate tone, pitch, intonation, emphasis and accent
- take part in plays and express appropriately while enacting small roles

Narrations and descriptions of travel, personal experiences, phenomena.

Republic Day celebrations, school annual day, etc.

Simple works of literature, local news, T V or Radio programme, etc

READING COMPREHENSION

- read a variety of reading material such as, stories, plays, poems, essays, letters, biographies etc.

A sight vocabulary of 5000 (3200 acquired + 1800 new) words. Stories related to different themes mentioned below

(a) Travelogues such as of Guliver, Vasco-de-gamma, Columbus, etc

Stories of famous writers of the concerned language e.g stories of Bhagwati Charan Verma, Prem Chand, in Hindi
Stories (retold) of writers of other languages

Essays and write-ups on

(b) Village life

(c) Health, hygiene, nutrition

(d) Modern and improved means of transport

(e) Development and progress in different parts of country.

(f) Life of the people of other countries, their food, language, festivals, life styles, etc.

(g) Games, sports.

Various items in the newspapers, such as news, advertisements, notices etc.

Notices, handwritten letters etc.

Story books, plays, textual and non-textual reading material on developmental works in the country, biographies of great men, saints, descriptions of fairs, festivals, people living in distant countries, simple works of literature, poems, etc.

- read aloud with correct pauses and pronunciation News items in the newspapers and on T V , radio.
- read silently with appropriate speed
- recall the meanings of words and statements of the text read.
- infer the contextual meanings of words, usages, idioms
- see the relationship among the events, facts, ideas and feelings etc, expressed in a communication and evaluate them
- identify the message of the text
- analyse the facts, ideas and reasons given in the text
- poems related to beauty of nature, feelings, human behaviour
- give his/her opinion about the characters, events of the text read.
- locate appropriate meanings of words from the dictionary.
- select reading materials of his/her own choice for information, enjoyment and relaxation.
- recall pairs of words, idioms, one word for many words etc. form the text.
- identify different grammatical categories like tenses, genders, numbers etc.

WRITTEN EXPRESSION

- write legibly and neatly with reasonable speed An active vocabulary of 2000 (1280 acquired + 720 new) words
- write words with correct spellings.
- write coherently and relevantly.
- reproduce simple stories, narrations, events etc.
- write essays, paragraphs on given topics.
- write letters, applications etc, in appropriate format.
- write personal letters.

Business letters, applications, personal letters and notes, stories, and essays on topics of interest and experience.

- use appropriate vocabulary and grammatical items while writing compositions, reports, etc answers to the questions based on the text or observations.

COMMON CORE COMPONENTS

Note : Common Core Components related to all the four language skills, been given together

HISTORY OF INDIA'S FREEDOM MOVEMENT

NATIONAL IDENTITY

COMMON CULTURAL HERITAGE

- Life stories of regional and national heroes like Lala Lajpat Rai, Jai Prakash Narain, Bhagat Singh, S.Satyamurthi, Dr. Zakir Hussain, Dr. Radha Krishnan, Rani Laxmi Bai, Bahadur Shah Zafar
- Events like revolt of 1857, trial of prisoners, etc.
- Names and description of places, and festivals e.g. Ajmer Sharif, Tirupati Temple, Shanti Niketan, Fateh Pur Sikri, Agha Khan palace, Muharram, Ganesh Chaturthi, Onam, Easter etc ,
- Role of local bodies like Gram Panchayat, Municipal Committee etc
- Poems and songs related to struggle for freedom and bravery like 'Jhansi Ki Rani', 'Do Mahal' 'Haldi Ghati' in Hindi
- Poems and songs of patriotism.
- Plays, stories depicting the logic and need of removal of social barriers
- Interdependence of States of the country.
- Dams and Industries of the country
- Life of tribals, their cultural richness, their dances and handicrafts.
- Stories related to personalities like Shivaji and Gauhar Bano, Humayun and Rani Karamvati of Gujarat, rani Padmini and Allaudin, Budha and Sujata, King Porus and Alexander, Askoka, Chander Gupta and Seyluka, etc

PROTECTION OF THE ENVIRONMENT

- protection of wild life/animal life
- Famous gardens of India

INCULCATION OF THE SCIENTIFIC TEMPER

- Life stories and descriptions of men like Homi Bhaba, Vishvesharaya, institutes like Bhaba Institute
- Role of inventions like computer, Television, Telephone in our day-to-day life

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CHAPTER-4

MINIMUM LEARNING OUTCOMES AND CONTENT FOR TEACHING MATHEMATICS

Introduction

Among the basic curricular experiences to be provided to children at the primary stage, experiences pertaining to mathematics have an important place. The study of mathematics has become indispensable in one's life due to its wide ranging applications. The modern technological society requires daily use of skills such as measuring, organising data, interpreting data, estimating and problem-solving, in formulating and establishing hypotheses as well as in making inferences and predictions. Application of knowledge and skills in mathematics are required in day-to-day transactions. In the context of the changing needs of society and the constant exposure to the vast amount of quantitative data, *mathematics is visualised as a vehicle to train a child to think precisely and logically, to reason, and to use quantitative measurements and treatments for solving problems faced in real life situations*. The study of mathematics at the primary stage, therefore, is expected to lay the foundation of mathematical thinking about the numerical and spatial aspects and relationships among the objects and activities which children at this stage would encounter.

Organisation of Curriculum

The general objectives of teaching mathematics stated in chapter 2 provide broad guidelines for framing of subsidiary objectives associated with each of them. The specification of subsidiary objectives has been followed by identification and specification of the Minimum Learning Outcomes (MLOs) and the content related to them. Learning experiences and procedures for assessment of performance of learners have to be designed on the basis of these MLOs. Thus, the curriculum developed here has been centred around certain Learning Outcomes common for all learners in the country so as to ensure a broad commonality in terms of expected level of attainment of learners at the end of each class of the primary stage and standard of education throughout the country. In view of the NPE's recommendations, a careful selection of Minimum Learning Outcomes (MLOs) has been made in the following pages. All efforts need to be made to bring all learners in the country irrespective of their modes of learning such as formal, non-formal and self-learning to the Minimum Levels of Learning laid down here. The curricu-

ulum, however, would allow for flexibility in terms of designing learning experiences keeping in view the local requirements and environmental contexts in order to encourage initiative and innovations by the teacher, the school and by the local educational authorities. While the adoption of strategies for curriculum transaction is left to the option of the school teacher, the scope for flexibility allowed in respect of curriculum transaction is expected to be used only for adding enrichment materials to facilitate solving problems related to local and regional situations and *not for adding more content in terms of more units or topics*.

Time Allocation

The MLOs and the content have been specified on the basis of the availability of at least 200 periods for each class. They have been presented in detail to indicate the scope of the content. They are expected to serve as guidelines in the preparation of the instructional packages, including text books. It, however, does not mean that the content is prescriptive. Based on the local situations, the teachers could derive content to enrich the learning experiences of the learners. The MLOs have been listed in a certain logical sequence keeping in view the prerequisites necessary for attaining them.

Entry Level Attainment in Numeracy

A child at the age of 5-6 enters class I of the formal stage of education. The children coming to class I are of two types—those who have not received any pre-school education and the others who have received one/two years of pre-school education. The children of the first category, generally, possess the ability of counting objects numbering from 1 to 10. They may recognise/recall some number names, but they may not be in proper sequence. Those who belong to the second category may count objects numbering from 1 to 20 or 50. They may recite number names up to hundred in sequence. Some of them may also be able to write numerals for some numbers.

A large number of children at this age are able to classify the given objects/things in terms of various concepts such as big-small, long-short, thick-thin, far-near, more-less, heavy-light, inside-outside, etc. But the concept of sensation may not be there.

Common Core Components

The study of mathematics should help children in inculcating scientific temper which includes spirit of inquiry, objectivity and a habit of seeking more evidence before arriving at conclusions, etc. Problems related to population growth, agricultural and industrial development, depletion of natural resources, etc. should be incorporated in the instructional materials of mathematics. The problems to be included should be carefully designed so as to promote the values such as equality of sexes, protection of the environment, observance of small family norm. India's contribution in the development of Indo-Arabic numeration system should be highlighted.

Instructional Material

The new package of instructional materials is to be based on the new curriculum of mathematics developed in the light of the National Curriculum for Elementary and Secondary Education—A Framework (Revised Edition, 1988). New materials need to be developed with reference to MLOs. A wide variety of print and non-print instructional materials will be required to ensure the attainment of the desired Minimum Levels of Learning by all children. *The new materials are visualized as guidelines for learning mathematics rather than teaching of mathematics.*

The new package of instructional materials could include (a) textbooks (b) workbooks/worksheets (c) games (d) manipulative materials/teaching aids (e) instructional manuals and (f) teacher's handbooks. It is desirable to develop a mathematics textbook for classes I to V. The nature and its organisation may vary from class to class. Books for classes I and II may be of textbook-cum-workbook type, wherein the concepts are presented through extensive use of visuals. When the concepts are presented through visuals, the development of a detailed instructional manual for these two classes becomes essential. The use of only textbooks should not dominate the teaching-learning process of mathematics. Instructional materials in the form of games provide a wonderful opportunity to children not only for practising and reinforcing skills learnt, but also for applying the concepts and principles of mathematics in solving problems. Further, concrete/semi-concrete materials are effective means to develop concepts and principles. As children go through the process of manipulating and putting together concrete materials, mathematics becomes more meaningful and learning becomes more permanent. Handbooks for primary school teachers are a must. In-service teachers need to be introduced to the salient features of the new curriculum, form and content of instructional materials, innovative teaching-learning strategies and the effective

methods of evaluating children's performance. They further require guidelines for adopting suitable measures related to remedial work. They need an exposure to a wide range of activities, teaching aids that could be used by them in classroom situations. Instructional materials in the form of handbooks can provide enough scope to teachers in enhancing their own competence.

The salient features of these materials would be the use of experiences of children, environmental tilt to the gamut of experiences, development of concepts using environmental experiences, sequencing of the concepts in a spiral fashion, active participation by learners, interaction in small groups and play-way techniques. While developing new materials, pupil's vocabulary has to be kept in mind. The requirement of gifted children should also be kept in view while preparing new materials. Authors have to be careful that children may not develop wrong or distorted concepts which will have to be unlearned at a later stage.

Teaching-Learning Strategies

While discussing appropriate teaching-learning strategies that could be adopted to ensure the attainment of specified learning outcomes by all children, it would be desirable to group the students in two major groups:

1. Group 1: Classes I and II
2. Group 2: Classes III, IV and V

1. The age of children in this group ranges from 5+ to 7+, i.e., the pre-operational stage, according to Jean Piaget. Children of this age are interested in play and games. Through games of aiming, chasing, hiding, board and card games, etc., children understand number concepts correctly. Research findings indicate the effectiveness of utilization of manipulative material as it involves children in the process of *doing* mathematics. Activities which involve children in manipulating materials, discussing their observations and forming generalizations, and which can be built around their everyday experiences, lead to better learning of mathematics by them. Of course, this approach calls for the provision of the necessary materials. To make the classroom teaching attractive, interesting and easily graspable, a variety of teaching aids need to be used in the teaching-learning process. In fact, each primary school should have a *mathematics kit* equipped with inexpensive aids. Needless to mention such aids should be prepared using locally available materials with the help of children.

Children need to be allowed to work together and to work out mathematical truths for themselves. Correcting oneself and being corrected by peers in group-work may be a much more meaningful experience than completing

worksheets individually and get them checked by the teacher.

2. The child of this group, i.e., from 8+ to 11+ years, is at a concrete operational stage. This stage marks a beginning of certain types of logical thoughts in children. Thinking logically is necessary to understand mathematical concepts. The child should have concrete objects as a basis for abstracting mathematical ideas. As the child manipulates objects he/she is at some point able to discern the mathematical ideas or structure involved. It is, therefore, necessary for the child to begin learning about abstract mathematics inductively by using objects in the physical world. *It is not sufficient to "tell" or "explain" or "show". The child should derive the mathematics from the objects, patterns, aids, etc. on his own.*

The curriculum for this stage envisages a conceptual approach that emphasises the discovery and understanding of mathematical ideas rather than the mere mastery of isolated facts and techniques. Drill for mastery of skills is expected to be used primarily as a follow-up to the mathematical concepts which are developed through an understanding of the overall structure of mathematics. The focus should be on encouraging children to discover ideas for themselves, to look for interesting patterns and relationships and to draw their own generalisations. The curriculum envisages emphasis on problem-solving and adequate practice for attainment of accuracy and speed. The stress should be on logical reasoning, creating patterns, structures and skills rather than on the mastery of skills alone.

This makes it imperative to evolve a teaching-learning environment which would facilitate problem-solving by children. Children should be encouraged to think, to question, experiment, estimate, explore and seek explanations. The teaching-learning process should provide opportunities for the learners to explore with concrete materials, to participate in activities, to involve in mathematical conversations and to confront the problems in a greater variety of forms than what is indicated in the textbook.

Evaluation

As stated earlier, the broad objectives of teaching mathematics at the primary stage are to promote understanding of the mathematical concepts and to develop adequate skills in using these concepts. This envisages a shift in emphasis on evaluation techniques/processes. At present most of the evaluation procedures centre primarily around the acquisition of skills tested through what is generally referred to as paper-pencil test. The present emphasis on promoting understanding of the mathematical concepts and their application to solve problems brings into focus the need to evaluate performance of children on the basis of daily observations, to assess their ability to attack new (unfamiliar) problems with the powers of reasoning and to seek out and develop concepts for himself/herself. In other words, it is necessary to recognise and give credit to those children who are able to attack such problems of their own.

In the earlier two classes, i.e., classes I and II, the technique of oral testing is desirable. The attainment of various learning outcomes identified for this stage can be evaluated more effectively through oral testing. In other three classes, i.e., classes III to V, both the techniques of oral testing and written testing have to be employed. Besides oral and written testing techniques, evaluation using manipulative materials, play-way activities, games, puzzles, riddles, etc. is also considered to be effective. Whatsoever techniques of evaluation are selected, evaluation should seek to ascertain what has been learnt and what has not been learnt. The emphasis should be on helping each child to attain the Minimum Learning Outcomes. In case of those who have not mastered the MLOs, the teacher should provide remedial work to help them attain the designated levels of learning.

While evaluating the child's performance in respect of various Minimum Learning Outcomes, emphasis should be laid on the process of learning along with the *product* of learning.

MATHEMATICS

CLASS I

Minimum Learning Outcomes

UNIT: SIZES, LENGTHS, SHAPES AND POSITIONS

The learner should:

arrange things/objects of different sizes in order from the smallest to the biggest and vice-versa.

- identify in a collection of things/objects, the things/objects which are of the same size.
- identify, between two things/objects, the one which is smaller/bigger than the other.

Content

Expressions such as big-small, bigger than-smaller than; the biggest-the smallest, etc., used for comparing the sizes of objects/things in the environment.

Order/seriation of objects/things in terms of their sizes.

Comparison of numbers up to hundred.

- identify, in a given collection of things/objects, the smallest and the biggest things/objects
- compare things/objects of different sizes using expressions such as “small” “big” “smaller than”, “bigger than” “the smallest” and “the biggest”.

arrange things/objects of different lengths in order from the shortest to the longest and vice-versa.

Expressions such as long-short, longer than-shorter than, the longest- the shortest etc , used for comparing the lengths of things/objects in the environment.

- identify, in a collection of things/objects, the things/objects, which are of the same size.
- identify, between two things/objects, the one which is shorter/longer than the other.
- identify, in a given collection of things/objects, the shortest and the longest things/objects
- compare things/objects of different lengths using expressions such as long-short, longer than-shorter than, and the longest and the shortest.

Order/seriation of things/ objects in terms of their length

arrange things/objects of different heights in order from the shortest to the tallest and vice-versa

Expressions such as short-tall; shorter than-taller than, the shortest-the tallest etc., used for comparing the heights of things/objects in the environment.

- identify, in a collection of things/objects, the things/objects, which are of the same height.
- identify, between two things/objects, the one which is shorter/taller than the other one
- identify, in a collection of things/objects the shortest and the tallest things/objects
- compare things/objects of different sizes using expressions such as short/ tall, shorter/taller than, the shortest/tallest.

Order/seriation of objects/things in terms of their height

arrange things/objects of different thicknesses in order from the thinnest to thickest and vice-versa.

Expressions such as thin-thick, thinner than-thicker than; the thinnest-the thickest etc , used for comparing the thicknesses of objects/things in the environment.

- identify, in a collection of things/objects, the things/objects which are of the same thickness.
- identify, between two things/objects, the one which is thicker/thinner than the other one.
- identify, in a given collection of things/objects, the thinnest and the thickest things.

Order/seriation of objects/things in terms of their thickness.

- compare things/objects of different sizes using expressions such as thin/ thick, thinner than/thicker than and the thinnest/thickest

classify objects/things and cut-outs/figures of objects according to their shapes.

Objects/things of similar shapes.

- group objects/things which look alike in terms of their shapes
- group figures or cut-outs of objects of similar shapes.

compare position of things and persons in terms of the distance from a given point of reference.

Expressions such as near-far, nearer to-farther than, nearest to-farthest from etc., used for comparing the position/location of things/persons in terms of the distance from a given point of reference.

- identify a thing which is nearer to or farther from a given point of reference.
- compare position of things using expressions such as near to, nearer to, farther than, nearest to, and farthest from a given point of reference

compare the quantities of liquid in containers of the same size and shape and arrange the containers in order from the one which contains the least quantity of liquid to the one which contains the largest quantity of liquid

Levels of liquid in different containers of the same size and shape.

Expressions such as same as, more than, less than, least, most or largest quantity used for comparing quantities of liquids in two containers of the same shape and size.

- identify, from among three/four containers of the same shape and size containing different quantities of liquid the containers which have the same quantity of liquid.
- identify, between the two containers of the same shape and size containing different quantities of liquid, the container which has more/less liquid.
- identify, from among four or five containers of the same shape and size containing different quantities of liquid, the container which has the least/largest quantity of liquid.

Order/seriation of containers (of the same shape and size) in terms, of the level/quantity of liquids in them, i.e., from the vessel containing the least quantity of liquid to the vessel containing the largest quantity of liquid.

compare two collections of things/objects by matching the members of one collection with the members of another collection using one-to-one correspondence

Concept of a collection and members of the collection.

One-to-one correspondence of members of two collections.

- identify, between the two collections, the collection which has more/less members using one-to-one correspondence.

Pairing of members of two collections using matching lines.

- identify the collections which have the same number of members using one-to-one correspondence Collections having equal and unequal number of objects
- compare the number of objects in different collections using expressions such as less than/fewer than, more than, equal or as many as

UNIT NUMBERS FROM ONE TO NINE

identify the number of objects/things in a collection having not more than nine members. Counting of the number of objects in a collection

- make collections having the given number of objects Expressions such as least/largest, used for comparing collections of objects
- identify, from among three or four collections, the collection having the largest/least number of objects. Order/seriation of collections in terms of objects in the collections

read and write numerals for numbers from one to nine. Numbers from one to nine and numerals from 1 to 9

- see relationship between the number of objects in a collection and the numeral(s) for the number(s)
- recognise numerals from 1 to 9
- write numerals from 1 to 9
- write numerals for the corresponding spoken numbers (numbers not to exceed nine).
- match the collection with the numeral which represents the number of members in the collection
- arrange given collections of objects/things in order from the collection having the least number of objects/things to one having the largest number of objects/things and vice-versa.

UNIT ORDERING OF NUMBERS

state the numbers from one to nine in ascending order and arrange the given numerals from 1 to 9 in the ascending order to numbers. Relationship between a number name and the corresponding numeral (Example The number name 'five' and the numeral '5' are ways to describe a collection with five objects)

- see relationship between a number and the number just after it Ascending order of numbers from one to nine

- recognise the ascending order of numbers one to nine.

- state numbers one to nine in ascending order and write the numerals corresponding to them A given number as one more than the preceding number (Example, three and one more is four, eight and one more is nine, etc)

- ~ write the numeral for the number which comes just after a given number (given number not to exceed eight)
 - ~ write numerals up to 9 in ascending order of numbers starting from any number lying between one and eight.
 - ~ rearrange given numerals and write them in ascending order of numbers
- The numerals of numbers in ascending order (1,2,3,4, 5,6,7,8 and 9)
- The numeral for the number which comes after a given number (Example: numeral 5 comes after the numeral 4, numeral 8 comes after the numeral 7 etc.)
- Numerals corresponding to ascending order of numbers starting from a particular number (Example, Numerals up to 9 starting at 5, Numerals up to 9 starting at 3, etc.)
- Rearrangement of given numerals in ascending order of numbers (Example. Numerals 8,1,6,4,2,5,7,3,9 as 1,2,3,4,5,6,7,8,9 or numerals 6,5,7,9,8 as 5,6,7,8,9)
- state the numbers (one to nine) in descending order and arrange the given numerals in descending order of numbers*
- see relationship between a number and the number just before it.
- Descending order of numbers (one to nine).
- The number just before a given number as one less than the given number (Example. 1 less than 8 is 7 etc.)
- ~ recognise the descending order of numbers.
 - ~ state, starting from nine, the numbers up to one in descending order and write the numerals corresponding to them
 - ~ write the numeral for the number which is just before a given number (given number vary from two to nine)
 - ~ write numerals in descending order of numbers starting from any number lying between two and nine.
 - ~ rearrange given numerals and write when in descending order of numbers.
- Numerals corresponding to descending order of numbers starting from a particular number (Example Numerals up to 1 in descending order starting at 5, numerals up to 1 in descending order starting at 7, etc.)
- Rearrangement of given numerals in descending order of numbers (Example: Numerals 6,7,3,5,1,2,4 as 7,6,5,4,3,2, and 1 or numerals 3,1,4,2,5 as 5,4,3,2 and 1)
- Write the numerals corresponding to the numbers which are just before and after a given number (number ranging from two to eight) and the numeral(s) corresponding to the number(s) which come in between two given numbers (numbers ranging from one to nine).*
- Numbers which are just before and just after a given number (Example Three is just before four, seven is just before eight and nine is just after eight.); idea of 'betweenness' (Example: such as numerals between 2 and 4, 5 and 7, 8 and 9, 5 and 9 etc.)
- ~ state the numbers which are just before and just after a given number and write the numerals corresponding to them.
 - ~ write the numeral for the number that comes in between two given numbers, one of which is two more than the other.
- Numbers between two given numbers and numerals for them.

- write the numerals for all the numbers that come in between two given numbers, one of which is at least three more than the other

identify the ordinal numbers corresponding to the position of objects/persons arranged in order from left to right, right to left, bottom to top, top to bottom, front to back, back to front with respect to a point of reference (ordinal numbers up to ninth).

Ordinal numbers from first to ninth—their use in labelling objects or identifying positions of objects in a given arrangement (left to right/right to left/bottom to top/top to bottom/front to back/back to front)

- see relationship between ordinal numbers first, second, ..., and ninth and the position of objects/persons arranged in a line
- identify the objects/persons in an arrangement corresponding to a given ordinal number (up to ninth).

Position of persons standing in a queue or position of objects placed in a line. (line may be horizontal, vertical or oblique)

Various forms of arrangements of objects/persons

UNIT. COMPARISON OF NUMBERS

compare two numbers and arrange the numbers in ascending/descending order.

- count the number of objects in two collections and identify the collection in which the number of objects is greater
- recognise the sign $>$ used to indicate "is greater than" while comparing two numbers
- indicate which of the two given numerals represents a greater number by using the sign $>$ (numerals up to 9)
- identify, out of the given numerals, the numeral corresponding to the greatest number.
- count the number of objects in two collections and identify the collection in which the number of objects is fewer
- recognise the sign $<$ used to indicate "is less than" while comparing two numbers.
- Indicate which of the two given numerals represents a smaller number by using the sign $<$ (numerals up to 9)
- identify, out of the given numerals, the numeral corresponding to the least/smallest number.
- arrange given numerals from 1 to 9 in ascending/descending order of numbers when some numerals corresponding to numbers in between the smallest and the largest numbers are not given.

Idea of "is greater than" and "is less than"

Idea that the number of elements in one collection is greater/less than the number of elements in the other if there are more/fewer objects in one collection than in the other.

Signs $>$ and $<$ to compare given numbers

Rearrangement of given numerals (from 1 to 9) in ascending/descending order of numbers when all numerals corresponding to numbers in between the smallest and the largest numbers are not given (Example. Rearrangement of numerals such as 8,5,3 & 9 as 3,5,8 & 9 and rearrangement of numerals such as 6,8,3,5,2 as 8,6,5,3,2).

Numerals corresponding to numbers which are greater than one number but less than another number (Example: Numerals corresponding to numbers which are greater than four but less than eight.

- write the numerals corresponding to numbers which are greater than a given number but less than another number

UNIT: ADDITION

add two numbers, the sum not exceeding nine

Addition of numbers, sum not to exceed nine.

- add two numbers (using two collections of objects), sum not exceeding nine

Introduction of the concept of addition as an operation involving joining of new members to a collection or putting together objects/elements of two collections

- recognise the symbol + (plus) used for the operation of addition

Oral problems involving addition associated with joining of new members to a collection or putting together objects/elements of two collections.

- use the sign = (is equal to) to write the addition facts

- state and write the addition facts (sum not exceeding nine) using two collection of objects

- write all addition facts of a given number up to nine

Use of the + (plus) sign for indicating addition operation.

- find out the missing addends to make an addition fact

Introduction of addition facts, e.g., $5 + 3 = 8$

- generalise that two given numbers when added in either order give the same sum

Addition facts of all numbers up to nine.

- add two given numbers (sum not to exceed nine) when their numerals are written in row or column form.

Intuitive recognition of the idea that two numbers may be added in either order, e.g., $4 + 2 = 2 + 4$.

- fill up the missing numerals in addition table using addition facts.

Introduction of the vertical notation for addition, i.e., addition of numbers when their numerals are written in column(s).

- find out, using addition facts, two numbers whose sum is the given number.

Preparation of addition table.

UNIT: SUBTRACTION

subtract a number from another greater number (greater number not to exceed nine)

Subtraction of a number from another greater number, greater number not exceeding nine)

- generalise that subtraction is a process of taking away some objects from the collection and finding out the number of remaining objects.

Introduction of the concept of subtraction using the process of taking away

- find out the difference between the number of objects in two collections.

Simple oral problems involving subtraction associated with taking some objects away from the collection, e.g., 4 birds, 2 flew away, 2 left.

- recognise the sign – (minus) used for the operation of subtraction.

Use of the – (minus) sign to indicate subtraction.

- recognise all subtraction facts of a given number •
- subtract a number from a greater number (not exceeding nine) when two numbers are presented in row or column form Introduction of subtraction facts (e.g., $5 - 2 = 3$)
- fill up the missing numerals in subtraction table using subtraction facts. Subtraction facts of numbers up to nine
- find out two numbers whose difference is the given number (e.g., $\quad - \quad = 4$ etc) Vertical notation for subtraction, i.e., when numerals are presented in column form
- find out the missing number in a subtraction equation (e.g. $9 - \quad = 8$ or $\quad - 3 = 4$) by trial and error method Preparation of subtraction table
- find out, using subtraction facts, two numbers whose difference is the given number
- find out the corresponding addition fact associated with the subtraction fact
- find the sum of and difference between two numbers when one of them is zero.* Introduction of concept of zero and the numeral for zero
- identify zero as the number representing nothing or the absence of objects. Subtraction of a number from the number itself
- generalise that zero is the difference between two same numbers. Addition of zero to a number up to nine.
- recognise the numeral 0 for the number 'zero' Subtraction of zero from a number up to nine.
- find out the sum when 0 is added to a number (not exceeding nine) and generalise that the sum of a number and zero is the number itself

UNIT: NUMBERS FROM TEN TO TWENTY

- read and write numerals for numbers up to twenty.* Numbers from ten to twenty and numerals from 10 to 20.
- see relationship between nine and ten as "one more than nine is ten" i.e., $9 + 1 = 10$. Number 'ten' as 'one more than nine' and its numeral 10.
 - recognise all possible combinations of two numbers from one to nine whose sum is ten (addition facts of 10).
 - see relationship between a number and the number just after or just before it, using the idea of one more or one less.
 - recognise 10 to 20 for the numbers ten to twenty Extension of numbers up to twenty and their numerals.
 - write numerals 10 to 20

read and write numerals from 10 to 20 in ascending/-descending order of numbers

Ascending and descending orders of numbers up to twenty.

- recognise the ascending and descending order of numbers from ten to twenty

Numerals 10 to 20 in ascending order of numbers, e.g., $10 + 1 = 11$, $11 + 1 = 12$, ..., $19 + 1 = 20$ etc

- count forward numbers up to twenty

- count backward numbers starting from twenty.

Numerals 20 to 10 in descending order of numbers, e.g., $20 - 1 = 19$, $19 - 1 = 18$ etc.

- write numerals 10 to 20 according to ascending and descending order of numbers.

state the number(s) and write the numeral(s) corresponding to them in ascending order of numbers starting from an intermediate number in between one and twenty.

Numbers from ten to twenty and numerals from 10 to 20

- state the number that comes just after/just before a given number ranging between one and twenty.

Numerals for numbers which comes just after/just before a given number from two to nineteen.

- state all the numbers up to twenty in ascending order starting from any given number from one to nineteen and write the numerals corresponding to them.

Numerals for numbers in ascending/descending order starting from a particular number ranging between one and nineteen.

- state all the numbers in descending order starting from any number in between two and twenty and write the numerals corresponding to them

Rearranging given numerals in ascending and descending order of numbers, e.g., 15,12,11,17,18,20 in ascending order of numbers as 11,12,15,17,18,20 and in descending order as 20,18,17,15,12,11

- write the numeral corresponding to the number that comes just before the given number.

- write the numerals for all numbers in ascending/descending order starting from a given number.

- arrange given numerals (in between 1 & 20) in ascending and descending order of numbers.

write the numeral(s) corresponding to the number(s) which come(s) in between two given numbers up to twenty.

Numerals corresponding to the number that comes in between two given numbers, e.g., numerals for numbers in between 13 & 15, 18 & 20 etc.

- write the numeral corresponding to the number that comes in between two given numbers one of which is two more than the other

- write all the numerals corresponding to the number that come in between any two given numbers, one of which is at least three more than the other

indicate which of the two given numbers between one and twenty is greater/less than the other.

Comparison of numbers up to twenty

- indicate by using signs $>$ or $<$ the numeral which, out of the two numerals, represents the greater/smaller number. Use of the signs $>$ and $<$ to compare given numbers up to twenty.
- identify, out of the given numerals, the numerals corresponding to the greatest/largest and the smallest numbers Numerals corresponding to numbers which are greater than a given number but less than another number, e.g., numerals for the numbers that are greater than 11 but less than 19.
- write the numerals corresponding to numbers that are greater than a given number but less than another number
- add two numbers, sum not exceeding eighteen.* Addition of numbers, sum not exceeding eighteen.
- add two numbers, using forward counting (sum not exceeding eighteen). Addition facts of numbers from eleven to eighteen.
- recognise all addition facts of a given number from eleven to eighteen Addition of two one-digit numbers in columns (sum not exceeding eighteen)
- generalise that two given numbers when added in either order give the same sum (e.g., $9 + 7 = 16$, $7 + 9 = 16$)
- add two one-digit numbers (sum not to exceed eighteen) when the numbers are presented in a column
- fill up the missing numerals in addition table using addition facts, sum not exceeding eighteen Preparation of addition table using addition facts
- subtract a number from another greater number not exceeding eighteen* Subtraction of a number from another greater number (up to eighteen).
- subtract a number from another greater number not exceeding eighteen, using backward counting. Subtraction facts of numbers, e.g., $18 - 9 = 9$, $17 - 8 = 9$, $16 - 7 = 9$, $15 - 9 = 6$, $12 - 8 = 4$, $11 - 7 = 4$, $10 - 6 = 4$ etc.
- recognise all subtraction facts of a given number ranging from eleven to eighteen.
- find the difference between two given numbers ranging from one to eighteen.
- fill up the missing numerals in subtraction table, using subtraction facts Preparation of subtraction tables, using subtraction facts.

UNIT: NUMBERS UP TO ONE HUNDRED

- identify the number of objects in a given collection comprising of not more than 100 objects.* Grouping of objects in tens and ones
Numbers up to hundred in terms of tens and ones, e.g. 33 as 3 tens and 3 ones.
- recognise the extension of numbers by adding one to the previous number Counting by 1's up to 100. A number as one more than the preceding number, e.g., 48 as one more than 47, 68 as one more than 67 etc.)

read and write numerals up to 100.

- recognise numerals 20 to 100 for numbers from twenty to hundred.

recognise that all numbers from 20 to 99 are of 2 digits and the numeral 100 is of 3 digits.

- express a number up to hundred in terms of tens and ones
- read and write numerals 20 to 100.
- write the numeral for any number up to hundred when spoken or dictated.

read and write numerals 1 to 100 in ascending/descending order of numbers from one to hundred.

- count forward, numbers from one to hundred
- count backward, numbers from hundred to one.
- write the numerals 1 to 100 in ascending/descending order of numbers.

write the numeral(s) corresponding to numbers in ascending/descending order starting from a given number.

- write the numeral corresponding to the number which is just after the given number, not exceeding 99.
- write the numerals corresponding to the number which is just before the given number, not exceeding 100
- write the numerals in ascending order of numbers starting from a specific number in between 1 and 100

write the numeral(s) corresponding to the number(s) which comes in between two given numbers ranging from one to hundred

- write the numeral corresponding to the number which comes in between two given numbers, the differences between them is two
- write numerals corresponding to the numbers which come in between any two given numbers ranging from 1 to 100.

- state, using forward counting or ascending order of

Numbers up to hundred and their numerals.

Ascending and descending order of numbers up to hundred.

Counting by 1's up to hundred.

Counting by 1's in the descending order starting from hundred

Numerals for numbers which come just after and just before a given number.

Numerals corresponding to the numbers in ascending/descending order starting from a particular number, e.g., all numerals from 40 to 100 in ascending order of numbers or all numerals in descending order of numbers starting at 82, etc

Numeral for the number that comes in between two given numbers, e.g., numeral for the number in between 38 & 40, 87 & 89 etc.

Numerals for the numbers that come in between two given numbers one of which is at least three more than the other, e.g., Numerals for numbers in between 42 & 58, 76 & 99, etc

Comparison of numbers up to hundred.

numbers which of the two given numbers in between one and hundred is greater/smaller. Indicate the relation by using sign $>$ or $<$

Use of the signs $>$ and $<$ to compare given numbers up to hundred.

– indicate using the sign $>$ or $<$ the greater/smaller number out of the two given numbers

Numerals for numbers which are greater than a given number but less than another number, e.g., numbers which are greater than 72 but less than 88, etc.)

– write the numbers and their numerals which are greater than a given number and less than another given number

Arranging given numerals in ascending/descending order of numbers, e.g., 10, 24, 50, 45, 72, 88, 95 in ascending order as 95, 88, 72, 50, 45, 24 and 10

– arrange given numerals between 1 and 100 in ascending/descending order of numbers

UNIT: MORE ABOUT ADDITION AND SUBTRACTION

add two or three numbers, sum not exceeding 99 (without regrouping)

Addition of a two-digit number and a one-digit number, using forward counting. (sum not exceeding 99), e.g., $78 + 4 = 80$, $57 + 5 = 62$

– add a two digits number and a one-digit number, using forward counting (sum not exceeding 99)
– add three one-digit numbers.

Addition of three 1-digit numbers.

– add two 2-digit numbers involving only one addition fact (sum not exceeding 99)

Addition of 2-digit numbers involving only one addition fact, e.g.,

$$\begin{array}{r} 42 \\ + 24 \\ \hline \hline \end{array} \quad \begin{array}{r} 26 \\ + 62 \\ \hline \hline \end{array}$$

– add two 2-digit numbers involving two addition facts.

Addition of 2-digit numbers involving two addition facts, e.g.,

$$\begin{array}{r} 43 \\ + 25 \\ \hline \hline \end{array} \quad \begin{array}{r} 64 \\ + 25 \\ \hline \hline \end{array}$$

– add two 2-digit numbers (at least one number with 0 at ones place) involving two addition facts

Addition of 2-digit numbers with 0 at ones place, e.g.,

$$\begin{array}{r} 40 \\ + 26 \\ \hline \hline \end{array} \quad \begin{array}{r} 30 \\ + 20 \\ \hline \hline \end{array}$$

– add a 1-digit number and a 2-digit number by writing them in columns and using addition facts.

Addition of a 2-digit number and a 1-digit number by writing in columns, e.g.,

$$\begin{array}{r} 72 \\ + 4 \\ \hline \hline \end{array} \quad \begin{array}{r} 52 \\ + 6 \\ \hline \hline \end{array}$$

subtract a number from another greater number (without regrouping), the greater number not exceeding 99.

Subtraction of a 2-digit number from a greater 2-digit number involving only one subtraction fact, e.g.,

$$\begin{array}{r} 66 \\ - 22 \\ \hline \hline \end{array} \quad \begin{array}{r} 88 \\ - 55 \\ \hline \hline \end{array}$$

- subtract a 2-digit number from a greater 2-digit number involving only one subtraction fact

Subtraction of a 2-digit number from a greater 2-digit number involving two subtraction facts, e.g.,

$$\begin{array}{r} 78 \\ - 52 \\ \hline \hline \end{array} \qquad \begin{array}{r} 64 \\ - 32 \\ \hline \hline \end{array}$$

- subtract a 2-digit number from a greater 2-digit number involving two subtraction facts.

- subtract a 2-digit number having 0 at ones place from a greater number of 2-digit.

Subtraction of a 2-digit number having 0 at ones place from a greater 2-digit number involving two subtraction facts, e.g.,

$$\begin{array}{r} 68 \\ - 20 \\ \hline \hline \end{array} \qquad \begin{array}{r} 40 \\ - 30 \\ \hline \hline \end{array}$$

- subtract a 1-digit number from a 2-digit number by writing them in columns and using subtraction facts.

Subtraction of a 1-digit number from a 2-digit number by writing in columns, e.g.,

$$\begin{array}{r} 78 \\ - 4 \\ \hline \hline \end{array} \qquad \begin{array}{r} 86 \\ - 5 \\ \hline \hline \end{array}$$

skip count by 10s up to 100, by 5s up to 50, by 4s up to 40, by 3s up to 30 and by 2s up to 40.

Grouping of objects by 10s, 5s, 4s, 3s and 2s. Counting in 10s up to 100, in 5s up to 50, in 4s up to 40, in 3s up to 30 and in 2s up to 40

UNIT. INDIAN CURRENCY

distinguish between coins of different denominations.

Indian coins in use up to denominations of 5 rupees.

- recognise coins of different denominations up to 5 rupees.

Value of a collection of coins (simple cases).

- match the given collection of coins with a coin having value equivalent or same as that of the value of all the coins of the collection taken together

Collection of different coins having the same value.

- find the total value of coins taken together (total value not exceeding 100 paise).

- make collections of different coins having the same value.

- recognise currency notes of different denominations up to 100 rupees.

Currency notes of denominations in use up to 100 rupees.

CLASS II

UNIT: NUMBERS UP TO ONE HUNDRED

read and write number names for numerals up to 100.

Number names for numerals up to 100.

- write number names corresponding to the number of objects in a collection having not more than one hundred things/objects.

- write number names for given numerals (numerals up to 100)

UNIT: PLACE VALUE

find the place value of each digit in a 2-digit numeral.

Numerals for numbers expressed in tens and ones

- write the numerals for given numbers when the numbers are expressed in tens and ones

Digits used for writing numerals

Ones and tens places in a 2-digit numeral.

- identify the number shown on an abacus

Representation of numbers on the abacus

- identify all the digits used for writing numerals

Place values of digits in 2-digit numeral

- identify the ones and tens places in a 2-digit numeral

Zero as a place holder.

- state the place values of the digits in a 2-digit numeral.

- write a given 2-digit numeral using expanded notation

Expanded notation for 2-digit numerals

- write the digits of given 2-digit numerals in a place value chart

Place value chart

UNIT NUMBERS UP TO ONE THOUSAND

read and write numerals from 101 to 1000 and their corresponding number names.

Grouping of objects in hundreds

- identify the number of objects in a collection when the objects are grouped in hundreds

Numerals for numbers expressed in hundreds, tens and ones.

Place of each digit in a 3-digit numeral

Numerals from 101 to 1000.

Number names for numerals from 101 to 1000.

- write the numeral and number name for a number when the number is expressed in hundreds, tens and ones.

- distinguish between a 2-digit and a 3-digit numeral

- identify the place of each digit in a 3-digit numeral

- write numerals from 101 to 1000.

- write number names for numerals from 101 to 1000

write the numerals for numbers between one hundred one and nine hundred ninety-nine in ascending/descending order starting from any number.

Ascending/descending order of numbers between one hundred one and nine hundred ninety-nine.

- state all the numbers which come in between two given numbers and write the numerals corresponding to them in ascending order of numbers
- state all the numbers which come in between two given numbers and write the numerals corresponding to them in descending order of numbers.

skip count by 12s, 15s, 20s and 100s starting from a given number to another number and write the corresponding numerals (numbers in between one hundred one and nine hundred ninety-nine)

Skip counting of numbers. Counting by 2s, 5s, 10s and 100s

find the place value of each digit in a 3-digit numeral.

Place value of each digit in 3-digit numerals

Expanded notation for 3-digit numerals

- identify the ones, tens and hundreds places in a 3-digit numeral.
- state the place values of the digits in a 3-digit numeral
- see relationship between a numeral and the sum of the place values of all the digits in a 3-digit numeral.
- write the given 3-digit numerals using expanded notation.
- write the digits of the given 3-digit numerals in a place value chart.

compare numbers through nine hundred ninety-nine.

Comparison of numbers through nine hundred ninety-nine

- indicate which of the two given numbers is greater/smaller by using the sign $>$ or $<$

Rule for comparing a 2-digit number and a 3-digit number

- identify the rule for comparing a 2-digit and a 3-digit number

Rule for comparing two 3-digit numbers

- identify the rules for comparing two 3-digit numbers.

The smallest and the greatest numbers in the given group of numbers.

- rearrange the given numerals in order from the one which represents the greatest number to the one which represents the smallest number and vice-versa

Numerals in order from the one which represents the greatest number to the one which represents the smallest number.

Numerals in order from the one which represents the smallest number to the one which represents the greatest number.

UNIT. ADDITION

solve 1 or 2-step problems involving addition of two or three numbers (sum not exceeding 999).

- identify addends and sum in an addition fact.

Addends and sum.

- identify the properties of addition. Properties of addition (those related to order of the addends, grouping of the addends, addition of zero to a number and addition of one to a number)
- add two or three numbers (sum not exceeding 999) without involving regrouping Addition of two or three numbers (sum not exceeding 999) without regrouping, e.g., $43 + 26$, $444 + 333$, $503 + 415$
- add two or three numbers (sum not exceeding 999) involving regrouping of the sum in the ones column Addition of numbers (sum not exceeding 999) involving regrouping of the sum in ones column
- add two or three numbers (sum not exceeding 999) involving regrouping of the sum in the tens column. Addition of numbers involving regrouping of the sum only in tens column, e.g., $484 + 385$, $364 + 75$
- generalise that the sum of two or three numbers is greater than each addend. Addition of numbers involving regrouping of the sum in the ones and tens columns, e.g., $285 + 496$, $465 + 97$
1- or 2-step problems involving addition of numbers (with and without involving regrouping)

UNIT. SUBTRACTION

- solve 1- or 2-step problems involving subtraction of a number from another number (greater number not to exceed 999).* Subtraction as a process of finding out the missing addend
- see relationship between the operations of addition and subtraction Addition and subtraction as inverse/opposite operations.
 - identify the properties of subtraction Properties of subtraction.
 - subtract a number from another number without involving regrouping of numbers (greater number not to exceed 999) Subtraction of a number from another number without involving regrouping, e.g.,
 $747 - 534$,
 $794 - 83$,
 $580 - 430$,
 $497 - 40$
 - subtract a number from another number involving regrouping of tens and ones in the greater number. Subtraction of a number from another number involving regrouping of tens and ones in the greater number, e.g.,
 $64 - 38$
 $80 - 42$
 $456 - 239$
 $890 - 432$
 $417 - 209$
 $848 - 39$
 - subtract a number from another number involving regrouping of hundreds and tens in the greater number. Subtraction of a number from another number involving regrouping of hundreds and tens in the greater number, e.g.,
 $413 - 322$
 $467 - 86$
 $708 - 435$
 - subtract a number from another number involving regrouping of tens and ones in the greater number, first followed by regrouping of hundreds and then tens. Subtraction of a number from another number involving regrouping of tens and ones, first followed by regrouping of hundreds and tens, e.g.,
 $464 - 275$
 $785 - 99$
 $640 - 355$
 $950 - 94$
 - subtract a number from another number involving regrouping of hundreds and tens in the greater number, first followed by regrouping of tens and then ones. Subtraction of a number from another number involving regrouping of hundreds and tens, first followed by regrouping of tens and then ones, e.g.,
 $464 - 275$
 $785 - 99$
 $640 - 355$
 $950 - 94$

- generalise that the difference between two numbers is always less/smaller than the larger number

Subtraction of a number from another number involving regrouping of hundreds and tens in the greater number first followed by regrouping of tens and ones, e.g.,

$$800 - 465$$

$$601 - 374$$

$$708 - 99$$

1- or 2-step problems involving subtraction of a number from another number (with and/or without involving regrouping)

UNIT: MULTIPLICATION

multiply a 2-digit number by a 1-digit number and solve word problems involving multiplication

Multiplication as a process of repeated addition.

Factors and product in a multiplication fact.

- see relationship between repeated addition and multiplication
- identify the factors and the product in a multiplication fact.
- identify properties of multiplication
- identify all multiplication facts (factors not to exceed ten).
- find the product of two numbers using multiplication facts (factors not to exceed ten)
- multiply a 2-digit number by a 1-digit number (without involving regrouping)
- multiply a 2-digit number by a 1-digit number involving regrouping
- solve simple word problems involving multiplication.

Properties of multiplication (those related to order of the factors, zero in multiplication and product of a number and one)

Multiplication facts (factors not to exceed ten)

Multiplication of two numbers (no number to exceed ten).

Multiplication of a 2-digit number by a 1-digit number (without involving regrouping), e.g., 20×3 , 22×4

Multiplication of a 2-digit number by a 1-digit number (involving regrouping), e.g., 25×3 , 35×4

Simple word problems involving multiplication.

UNIT: FRACTIONAL NUMBERS

divide a whole or a collection of objects into two or four equal parts and name one part as half, or one-fourth

Notion of whole, half and one-fourth through paper folding, shaded portion of plane figures, etc.

- recognise equal and unequal parts of a whole.
- recognise "half" and "one-fourth" of a whole
- divide a given plane figure into two or four equal parts to indicate half and one-fourth of the figure
- shade half or one-fourth of a plane figure.

Notion of whole, half and one-fourth through use of a collection of objects (total number of objects being multiples of two)

- express the shaded portion of a plane figure in terms of half and one-fourth

UNIT. GEOMETRICAL SHAPES

recognise and name common geometrical shapes and plain figures.

Geometrical solids—cuboid, sphere, cylinder and cones

- identify objects in the environment which are of the shape of a cuboid, sphere, cylinder and cone
- identify the number of faces, edges and vertices of objects in the shape of cuboid, sphere, cylinder and cone

Objects of different shapes—cuboidal, cylindrical, spherical and conical

Faces, edges and vertices of geometrical solids

- identify and name objects which have only plane surfaces, objects which have only curved surfaces and objects which have both plane and curved surfaces

Plane and curved surfaces

Straight and curved lines.

Plane figures such as rectangle, square, circle and triangle

- identify objects/geometrical solids which have straight edges or curved edges
- identify straight and curved lines
- recognise plane figures such as rectangle, circle, square and triangle
- draw straight and curved lines using objects having straight edge and/or curved edge.
- draw simple plain figures like rectangle, sphere, circle and triangle using objects having straight/curved edges

UNIT. MONEY

solve simple word problems involving addition and subtraction of rupees and paise.

Indian coins and currency notes in use

- make collections of 50-paise coins, 25-paise coins, 20-paise coins, 10-paise coins, and 5-paise coins which could be exchanged for a 1-rupee note/coin.
- make collections of coins of different denominations which could be exchanged for a 1-rupee coin, or note, 50-paise coin, 25-paise coin and 20-paise coin
- make collections of 50-rupee notes, 20-rupee notes, 10-rupee notes and 5-rupee notes, which could be exchanged for a 100-rupee note.

Collections of 50-paise coins, 25-paise coins, 20-paise coins, 10-paise coins and 5-paise coins

Collections of coins of different denominations which could be exchanged for a 1-rupee coin, 50-paise coin, 25-paise coin and 20-paise coin.

Collections of 50-rupee notes, 20-rupee notes, 10-rupee notes and 5-rupee notes which could be exchanged for a 100-rupee note

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| <ul style="list-style-type: none"> – make collections of currency notes of different denominations which could be exchanged for a 100-rupee note, a 50-rupee note, a 20-rupee note and a 10-rupee note. | <p>Collections of currency notes of different denominations which could be exchanged for a 100 rupee note, a 50-rupee note, a 20-rupee note and a 10 rupee note</p> |
| <ul style="list-style-type: none"> – find the total value of two or three coins of different denominations | <p>Total value of two or three coins of different denominations in paise</p> |
| <ul style="list-style-type: none"> – find the total value of two or three currency notes of different denominations | <p>Total value of two or three currency notes of different denominations.</p> |
| <ul style="list-style-type: none"> – find the sum when the addends are expressed in rupees and paise | <p>Addition in rupees and paise, e.g ,</p> $\begin{array}{r} 25 \text{ rupees } 40 \text{ paise} \\ + 15 \text{ rupees } 30 \text{ paise} \\ \hline \hline \end{array}$ |
| <ul style="list-style-type: none"> – find the difference between the values of two coins of different denominations | <p>Difference between the values of two coins or currency notes of different denominations</p> |
| <ul style="list-style-type: none"> – find the difference between the values of two currency notes. | <p>Subtraction in rupees and paise, e.g ,</p> $\begin{array}{r} 95 \text{ rupees } 80 \text{ paise} \\ - 32 \text{ rupees } 40 \text{ paise} \\ \hline \hline \end{array}$ |
| <ul style="list-style-type: none"> – find the difference between two amounts when the amounts are expressed in rupees and paise. | |
| <ul style="list-style-type: none"> – solve word problems involving addition and subtraction of rupees and paise. | <p>Word problems involving addition and subtraction in rupees and paise.</p> |

UNIT: MEASURES OF TIME

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|--|--|
| <p><i>read time on a clock in complete hour and in half-hour.</i></p> | <p>Reading time on a clock (in complete hour and in half-hour)</p> |
| <ul style="list-style-type: none"> – identify the hour-hand and minute-hand of a clock. | <p>Position of the hour and minute-hands of a clock at different times in a day (in complete and half-hour, e.g , 3 O'clock, 8 O'clock, half-past 8, half-past 3, etc.).</p> |
| <ul style="list-style-type: none"> – read time in complete hour when the hour-hand is at different marks on the dial of a clock and when the minute-hand is at mark 12. | |
| <ul style="list-style-type: none"> – read time when the minute-hand is at mark 6 on the dial and the hour-hand is in the middle of two marks on the dial of clock. | |
| <ul style="list-style-type: none"> – identify the position of the hour and minute-hands of a clock corresponding to a time given in complete hour and in half-hour. | |
| <p><i>see relationship between hour, day, week, month and year.</i></p> | <p>Relationship between hours and day, between days and a week, between days and a year and between days and a month.</p> |
| <ul style="list-style-type: none"> – identify the number of hours that constitute a day | <p>Sequence of days of a week and the months of a year.</p> |

- identify the number of days in a month by referring to a calendar Calendar indicating different months of a year
- state the number of days in different months in a year.
- name in sequence the months of a year and the days of a week
- identify, by using a calendar, the days on which important national days fall.

UNIT: MEASURES OF LENGTH

find length of an object, a room etc., by using standard units of length.

- *find the length of an object or a room by using non-standard units for measuring length such as finger length, span, cubit and pace* Non-standard units for measuring length
Standard units for measuring length (centimeter and meter)
- name the standard units for measuring length. Relationship between meter and centimeter
- find the length of an object, a room etc. by using standard units of length Addition of lengths when lengths are expressed in centimeters/meters and in meters and centimeters
- find the total length when the lengths are expressed in centimeters Subtracting lengths when lengths are expressed in centimeters/meters and in meters and centimeters.
- find the total length, when the lengths are expressed in meters. Simple word problems involving addition and subtraction of lengths
- find the total length when the lengths are expressed in meters and centimeters.
- find the difference between lengths of two objects when the lengths are expressed in meters.
- find the difference between lengths of two objects when the lengths are expressed in meters and centimeters.
- solve 1-step word problems involving addition and subtraction of lengths

UNIT. MEASURES OF MASS

solve 1-step problems involving adding and subtracting mass of objects.

Objects having same mass.

Objects which vary in mass

- compare mass of two objects and identify objects which have the same mass or the object which has more mass than the other Standard units for measuring mass.

- name standard units for measuring mass

Blocks/measures commonly used for measuring mass, e.g. 50 grams, 100 grams, 200 grams, 500 grams and 1 kilogram

- see relationship between kilogram and gram

Addition and subtraction of masses when masses are expressed in kilograms/grams and in kilograms and grams.

- identify different blocks/measures of mass such as 50 grams, 100 grams, 200 grams, 500 grams and 1 kilogram

Simple word problems to find out the total mass of two/three objects or to find out the difference between masses of two objects.

- find the total mass of two/three objects when the mass of each object is expressed in kilograms and grams

- find the difference between the mass of two objects when the masses are expressed in kilograms/grams and in kilograms and grams.

UNIT: MEASURES OF CAPACITY

solve 1-step word problems involving addition and subtraction of capacities.

Vessels having same capacity

Vessels which vary in capacity.

- compare capacities of two vessels and identify vessels whose capacity is greater/lesser than the other vessel

Standard units for measuring capacity.

Relationship between litre and millilitre.

- name standard units for measuring capacity

- see relationship between litre and millilitre

- identify different containers commonly used for measuring quantity of liquid (e.g. 1 litre vessel, 2 litre vessel, 5 litre vessel, 10 litre vessel).

Vessels used for measuring quantity of liquids, e.g., 1 litre vessel, 5 litre vessel, 10 litre vessel, 500 millilitre vessel, 200 millilitre vessel, 100 ml vessel, 50 ml vessel etc.

- identify different containers commonly used for measuring small quantity of liquids, e.g., 500 ml vessel, 200 ml vessel, 100 ml vessel and 50 ml vessel).

- find the total quantity of liquid when the quantity of liquids in two/three vessels is expressed in litres/millilitres and in litres and millilitres.

Addition and subtraction of capacities when the capacities are expressed in millilitres/litres and litres and millilitres.

- find the difference between the quantity of liquids in two vessels when the quantity of liquid in each is expressed in millilitres/litres and in litres and millilitres.

Simple word problems involving addition and subtraction of capacities.

CLASS III

UNIT. NUMBERS UP TO NINE THOUSAND NINE HUNDRED AND NINETY-NINE

read and write numerals from 1000 to 9999.

Extension of numbers from nine hundred and ninety-nine to nine thousand nine hundred and ninety-nine.

- extend the relationship already established in numbers up to nine thousand nine hundred and ninety-nine
 - read numerals up to 9999.
 - write number names for the given numerals.
 - write numerals for the given number names
 - write numerals for the smallest and the greatest 4-digit numbers.
- find/determine the place value of a digit in a 4-digit numeral.*
- arrange the digits of a given 4-digit numeral in the place value chart.
 - indicate the place value of a digit in a 4-digit numeral
 - write a 4-digit numeral in the expanded form.
- count in twos, threes, fours, fives, tens, hundreds and thousands starting from a given number*
- read and write numerals and number names through thousands
 - counting in twos, threes, fours, fives, tens, hundreds and thousands, write the numerals corresponding to the numbers in between two given numbers
- compare two numbers and indicate the greater/smaller numbers by writing their numerals and using sign > or <.*
- recall the rules for comparing two numbers.
 - state the meaning of the terms 'successor' and 'predecessor' of a number.
 - write the numerals for the successor and predecessor of a given number.
 - arrange given numerals in increasing order of numbers
 - arrange given numerals in decreasing order of numbers.
 - state the smallest/greatest number represented by 4-digit numerals
- Numerals and number names for numbers up to nine thousand nine hundred and ninety-nine.
- Use of an abacus to represent a number
- Use of four places, i.e., the thousands, the hundreds, the tens and the ones in expressing a numeral of 4 digits
- Concept of place value
- Use of place value chart
- Expanded form of numerals
- Counting by twos, threes, fours, fives, tens, hundreds and thousands.
- Identifying missing numerals by observing the pattern in the given numerals
- Ordering of numbers
- Rules for comparing two numbers.
- Successor and predecessor of a number.
- The smallest and the greatest numbers represented by 4-digit numerals

UNIT. REGIONAL AND ROMAN NUMERALS

read and write Roman and regional numerals corresponding to Hindu-Arabic numerals

Roman numerals up to XXXIX

- distinguish the number symbols of one system from the number symbols of another system.
- match the given regional numerals with corresponding Hindi-Arabic numerals.
- match the given Roman numerals with corresponding Hindi-Arabic numerals (numbers not exceeding thirty-nine).
- write Roman numerals for numbers from one to thirty-nine.
- write the regional numeral for the given Hindu-Arabic numerals
- write the Hindu-Arabic numerals for the given regional numerals.

Regional numerals corresponding to Hindu-Arabic numerals

UNIT. ADDITION AND SUBTRACTION OF NUMBERS

solve 1- or 2-step problems involving addition of numbers, sum not exceeding nine thousand nine hundred ninety-nine.

- add two or three numbers up to nine hundred ninety-nine by arranging the digits of their numerals in columns of hundreds, tens and ones, sum not exceeding nine thousand nine hundred ninety-nine (without and with regrouping).
- add two or three numbers up to nine thousand nine hundred ninety-nine by arranging the digits of their numerals in columns of thousands, hundreds, tens and ones, sum not exceeding nine thousand nine hundred ninety-nine (with regrouping the sum first in ones column, then in tens column, and then in both the columns—ones and tens).
- state the properties of addition
- use addition in solving problems related to situations arising in every day life

Addition of two or three numbers represented by 4-digit numerals.

Column addition.

Properties of addition:

(i) Two or more numbers can be added in any order, but the sum remains the same

(ii) When zero is added to a number or a number added to zero, the sum is the number itself.

solve 1- or 2-step problems involving subtraction of a number from another greater number (greater number does not exceed nine thousand nine hundred and ninety-nine).

Problems on addition related to situations arising in every day life.

Subtraction of a number from another greater number, both represented by 4-digit numerals.

Subtraction without involving regrouping.

- subtract a number from another greater number not beyond nine hundred ninety-nine by arranging the digits of their numerals in columns of hundreds, tens and ones (without and with regrouping) Subtraction involving regrouping in tens, hundreds or thousands column.
 - subtract a number from another greater number not beyond nine thousand nine hundred ninety-nine by arranging the digits of their numerals in columns of thousands, hundreds, tens and ones (with regrouping in tens, then in hundreds and then in thousands columns). Subtraction involving regrouping in tens, hundreds, and thousands columns.
 - subtract a number from another greater number involving regrouping in both tens and hundreds columns. Subtraction involving regrouping across zeros in ones, tens and hundreds column
 - subtract a number from another greater number involving regrouping in tens, hundreds and thousands columns together Properties of subtraction.
 - (i) When a number is subtracted from itself, the difference is zero.
 - (ii) When zero is subtracted from a number, the difference is the number itself
 - subtract a number from another greater number involving regrouping across zeros in the tens, hundreds and thousands columns.
 - state the properties of subtraction
 - solving subtraction problems related to situations arising in every day life. Problems related to situations arising in every day life and involving the process of subtraction
- solve simple problems involving operations of both addition and subtraction on numbers up to nine thousand nine hundred ninety-nine* Problems involving addition and subtraction of numbers related to situations arising in every day life.

UNIT: MULTIPLICATION

- solve 1- or 2-step problems involving multiplication of two numbers, the product not exceeding nine thousand nine hundred ninety-nine.*
- state the basic properties of multiplication. Multiplying a 3-digit number by a 1-digit number.
 - find the product of three numbers by suitably rearranging them. Properties of multiplication
 - (i) We may multiply three numbers in any order, the product remains the same.
 - (ii) The product of a number and one is the number itself
 - (iii) The product of a number and zero is zero.
 - multiply a number (not beyond nine) by 10, 20, 30, 40, ... 90 and recognise the rule for the operation
 - Multiplying a number by 10, 20, 30, 40, ... 90, e.g., 6 x 20, 8 x 40 etc.
 - Multiplying a number by 100, 200, 300, 400, ... 900, e.g., 4 x 200, 8 x 700 etc.

- multiply a given number (not beyond nine) by 100, 200, 300, 400, 900 and recognise the rule.
- multiply two numbers having 2-digits in their numerals.
- find the product of a number having a 2-digit numeral and a number having a 3-digit numeral
- use multiplication in solving problems related to situations arising in every day life

Multiplying one number by another number, both having 2-digit numerals.

Multiplying one number by another number, one of which has a 2-digit numeral and the other has a 3-digit numeral.

Problems on multiplication related to situations arising in every day life

UNIT: DIVISION

solve simple problems involving division of numbers (dividend not exceeding nine hundred ninety-nine and divisor not exceeding ten)

Division as distribution.

Division as repeated subtraction.

- distribute the objects of a group equally.
- divide a group of objects in smaller groups consisting of equal number of objects
- generalise that division is a repeated subtraction.
- indicate the terms 'divisor', 'dividend', 'quotient' and 'remainder' in a division sum
- find the quotient when a number is divided by another number (not exceeding ten) using repeated subtraction
- recognise that multiplication and division are inverse of each other

Relationship between multiplication and division—one is the inverse of the other

Meaning of the terms 'dividend', 'divisor', 'quotient' and 'remainder'

Properties of division:

- When a number is divided by one, the quotient is the number itself.
- When a non-zero number is divided by itself, the quotient is one.
- When zero is divided by a number (other than zero), the quotient is zero.

- write division facts up to $100 \div 10 = 10$
- write the corresponding division fact(s) for a given multiplication fact.
- write the multiplication fact for a given division fact
- state the properties of division.
- divide a number by another number without remainder and without regrouping (dividend not exceeding nine hundred and ninety-nine and divisor not exceeding nine)
- divide a number by another number with remainder and without regrouping.

Division using multiplication tables up to $10 \times 10 = 100$

Division facts up to $100 \div 10 = 10$

Division of a number (not exceeding nine hundred ninety-nine) by a number (not exceeding nine), without remainder and without regrouping, e.g., $936 \div 3$, $903 \div 3$, $400 \div 2$

Division of a number (not exceeding nine hundred ninety-nine) by a number (not exceeding nine), with remainder and without regrouping, e.g., $845 \div 4$, $809 \div 8$.

Division of a number (not exceeding nine hundred ninety-nine) by a number (not exceeding nine), without remainder and with regrouping, e.g., $856 \div 4$, $786 \div 6$, $264 \div 8$, $560 \div 4$, $810 \div 5$, $604 \div 4$.

- divide a number by another number without remainder but with regrouping. Division of a number (not exceeding nine hundred ninety-nine) by a number (not exceeding nine), with remainder and regrouping, e g , $762 \div 5$, $802 \div 6$.
- divide a number by another number with remainder and regrouping.
- divide a number by ten Division of a number by ten
- solve problems related to situations arising in every day life involving division. Problems on division related to situations arising in every day life

UNIT: FRACTIONAL NUMBERS

- read and write fractions (denominator not exceeding ten).* Fraction of a whole and of a group of objects half, one-third, one-fourth, . . . , one-tenth
- divide a whole or a collection of objects into equal number of parts, not exceeding ten. Fraction and fractional number
 - state the meaning of half, one-fourth, three-fourths, one-third, two-thirds, etc. Ordering of fractional numbers
 - write the fraction for a given fractional number
 - read the given fractions.
 - state the meaning of the terms 'numerator' and 'denominator' of a fraction.
 - write a fraction when its numerator and denominator are given (denominator not exceeding 10)
 - identify, out of the two given fractions having the same denominator, the fraction which represents the greater/smaller fractional number.
 - add two or three fractional numbers (corresponding fractions have the same denominator). Addition of two or more fractional numbers.
 - subtract a smaller fractional number from a greater fractional number (corresponding fractions have the same denominator). Subtraction of a fractional number from another greater fractional number.

UNIT: GEOMETRY

- distinguish among different kinds of objects and plane figures.* Common solids—cube, cuboid, cone, cylinder and sphere
- recognise objects with plain surface; with curved surface; and with plane and curved surface. Types of surface of solids
 - Faces, edges and vertices of common solids.
 - distinguish among shapes of common solids. Plane figures—square, triangle, rectangle and circle

- identify objects having surface(s) of a particular shape.
- identify the surfaces, edges and corners (vertices) of the given objects.
- identify plane figures such as rectangle, square, triangle and circle.
- identify the sides and the corners of a square and a rectangle.
- identify the sides and the vertices of a triangle
- distinguish among a square, a rectangle and a triangle

measure length and height of an object, and distance between two points.

- measure a line segment by using a 15 cm scale (zero mark on the scale is on the left end of the line segment)
- measure a line segment by using a 15cm scale (by placing any mark indicating a whole number on the scale on the left end of the line segment)
- measure the sides of the given plane figures and length of two different objects.
- find the length of two or more objects (in complete metres/centimetres).
- find the height of an object such as a table, in metres and centimetres.
- find the distance between two points in complete metres and centimetres.
- find the perimeter of a square, a rectangle and a triangle by obtaining the sum of the lengths of its sides.

draw a line segment of a given length

- represent a point
- draw a line segment joining two points.
- draw line segments of given lengths, using 15 cm scale.

UNIT: MONEY

solve simple problems on money involving operations of addition and subtraction

Sides/edges and corners/vertices of plain figures.

Characteristics of a triangle, a rectangle and a square

Measuring line segments

Measuring the sides of plane figures.

Measuring the lengths and heights of objects.

Measuring the distance between two given points.

Measuring the perimeter of a square, a rectangle and a triangle.

Point and line segment

Representation of a point

Drawing of a line segment joining two points.

Use of 15 cm scale to draw a line segment of given length.

Relationship between a rupee and paise.

- | | |
|--|--|
| – see relationship between a rupee and paise | Symbols and notations used for expressing an amount of money |
| – change rupees into paise and paise into rupees. | |
| – write a given amount of money in figures | Amount of money in words and figures. |
| – express the given amount of money in terms of rupees and paise when it is given in figures | Conversion of rupees into paise.
Conversion of paise into rupees |
| – add the given amounts of money | Addition in rupees and paise. |
| – find the difference between two given amounts of money | Subtraction in rupees and paise |
| – find the total cost and the amount left after purchasing certain items | Problems involving addition and subtraction in rupees and paise, related to situations such as buying and selling, deposit and withdrawal of money, etc. |
| – find the cost of given number of objects when the cost of an object is given. | Problems involving multiplication of rupees and paise by a number |

UNIT: TIME

- | | |
|---|--|
| <i>read time from a clock in hours and minutes, (minutes only in multiples of 5).</i> | Reading of time in hours, in half hours, in quarter hours and in minutes (minutes in multiples of 5) |
| – read time from a clock in hours and half hour. | |
| – read time from a clock in hours and quarter hours. | Positions of the two hands in a clock at different times during a day (time expressed in hours and multiples of 5 minutes) |
| – read time from a clock in hours and minutes (minutes only in multiples of 5) | |
| – indicate the position of the two hands of a clock to show the given time in hours and minutes | |
| – state the relationships between hour and minute, and day and hour | Relationship between day and hour, and hour and minute |
| – convert days into hours. | Conversion of days into hours. |
| – convert hours into minutes. | Conversion of hours into minutes. |

UNIT: MEASURES OF LENGTH

- | | |
|---|---|
| <i>solve simple problems on lengths involving operations of addition and subtraction.</i> | Relationships between kilometre and metre, and metre and centimetre |
| – see relationships between metre and centimetre, kilometre and metre. | |
| – convert metres into centimetres and kilometres into metres. | Conversion of metres into centimetres.
Conversion of 'metres and centimetres' into 'centimetres' |

Conversion of kilometres into metres

Conversion of 'kilometres and metres' into 'metres'

- express the length of an object given in 'metres and centimetres' into 'centimetres' and 'kilometres and metres' into 'metres'.
- add the given lengths when expressed in metres and centimetres (without regrouping) Addition of two or more lengths.
- find the sum of the given lengths when expressed in metres and centimetres.
- find the difference between two lengths when expressed in metres and centimetres (with regrouping). Difference between two lengths.

UNIT: MEASURES OF MASS

solve simple problems on mass involving operations of addition and subtraction Relationship between kilogram and gram.

- see relationship between kilogram and gram Conversion of kilograms into grams
- convert kilograms into grams. Conversion of 'kilograms and grams' into grams
- express the mass of a body given in 'kilograms and grams' into 'grams'
- add the given masses when expressed in kilograms and grams (without regrouping). Addition of two or more masses.
- find the sum of the given masses when expressed in kilograms and grams. Difference between two masses.
- find the difference between two masses when expressed in kilograms and grams (with regrouping). Problems involving addition and subtraction of masses, related to situations arising in every day life.

UNIT. MEASURES OF CAPACITY

solve simple problems on capacity involving operations of addition and subtraction.

- see relationship between litre and millilitre. Relationship between litre and millilitre.
- convert litres into millilitres Conversion of litres into millilitres
- express 'litres and millilitres' in 'millilitres' Conversion of 'litres and millilitres' in millilitres
- arrange the quantity of liquids given in litres and millilitres in columns and find the total quantity of liquid. Problems in which total quantity of liquid kept in three or four vessels/containers or the quantity of liquids left in a vessel after certain quantity is taken out, is to be determined

- find the total quantity of liquid kept in three vessels (quantity to be expressed in litres and millilitres)
- arrange the quantity of liquids in columns of litres and millilitres and subtract the one representing lesser quantity from the other representing more quantity.
- find out the amount of liquid left after taking a part of it from a vessel

CLASS IV

UNIT: TIME

read and write the time, using 12-hour clock times and 24-hour clock times in hours and minutes.

Reading and writing of time in hours and minutes, using 12-hours clock times and 24-hours clock times.

- identify the duration of time taken by the minute-hand to complete one round of the dial of clock
- identify the time taken by the hour-hand to move from one numeral to the next numeral on the dial of a clock
- read the time from a clock by looking at the positions of the two hands—hour-hand and minute-hand.
- state the number of times the hour-hand crosses each numeral during a day
- write the time, using am and pm
- write the time, using 24-hour clock times.

Use of am and pm in expressing the time

24-hour clock time

Writing time in hours notations

read the calendar to find the days corresponding to the given dates and dates corresponding to specific days of a week or a month.

Calendar and its format.

Uses of a calendar.

- identify the day corresponding to the given date.
- identify the date corresponding to the given day.
- state the relationships between day and week, month and year, and day and year.
- identify month of the year, using calendar.

state the smallest unit of time and identify its relationship with 'minute'.

Second—the smallest unit of time.

- identify the smallest unit of time.
- identify the hand which moves faster than the other two hands of a clock.

Relationship between various units of time

- find out the time taken by the second-hand to complete one round of the dial
- state the relationship between 'second' and 'minute'.

find the total time of an activity, duration of an activity, time of starting or completing an activity.

Problems involving the calculation of duration of an activity, completion/starting time, etc.

- find the total duration when time is indicated in hours and minutes.

Reading the time-table (Railways, Airlines) to determine the starting/reaching time of the train/plane and calculating the total time it takes in the journey.

- find the time after a few hours from the given time
- find the time of completion of an activity.
- find the difference in time between two given times.
- find the interval between two given times
- find the time before a few hours from the given time
- find the duration of an activity in hours, days or months.

UNIT: MULTIPLES AND FACTORS

find the multiples and factors of a number.

Multiples and factors of a number.

- recognise the multiples and factors of a number
- determine the multiples and factors of a number.
- recalls the properties of multiples and factors of a number
- verify whether a given number is a multiple or factor of another given number.

Properties of multiples of a number

- (i) Every number is a multiple of itself.
- (ii) Every number is a multiple of 1.
- (iii) Every multiple of a number is either greater than or equal to the number

- recognise odd and even numbers.
- determine whether a given number is divisible by another given number
- recognise prime and composite numbers.
- identify and list the prime and composite numbers from the given set of numbers, and also in between two given numbers

Even and odd numbers.

Properties of factors of a number.

- (i) 1 is a factor of every number.
- (ii) Every number is a factor of itself.
- (iii) Every factor of a number is either less than or equal to the number.

- determine whether the given number is prime or composite

Divisible numbers

Prime and composite numbers

Prime and composite numbers between two given numbers.

- identify the greatest prime number which is less than the given number Greatest prime number which is less than a given number
- identify the least prime number which is greater than the given number Least prime number which is greater than a given number

UNIT. COMMON FACTORS AND COMMON MULTIPLES

find the common factors of two or three numbers. Common factors of two or three numbers

- find common factors of two or three given numbers Coprime numbers (or coprimes).
- recall that 1 is the common factor of every two or three numbers
- identify the pair of coprimes.

find the lowest common multiples (LCM) of two or three numbers Common multiples of two or three numbers

- find common multiples of two or three numbers. Lowest common multiple (LCM) of two or three numbers
- find the lowest common multiple (LCM) of two or three numbers. Properties of LCM
 - (i) The lowest common multiple of two or three numbers is the smallest number which is divisible by each of the given numbers
 - (ii) If one number is the multiple of another, the greater number is the LCM of the two numbers
 - (iii) If two numbers are coprimes, then their LCM is the product of the two numbers.

Methods for determining the LCM of two or three numbers

find the prime factorisation of a number Prime factorisation of a number

- find the prime factorisation of a number. Factor tree
- verify whether the given factorisation of a given number is a prime factorisation Methods for determining the prime factorisation of a number
- find prime factorisation of a number, using factor tree LCM by prime factorisation of numbers
- determine the LCM of two numbers, using the method of prime factorisation of a number.

UNIT: LARGE NUMBERS

read and write numerals up to 1 00 00 000 and the corresponding number names. Extension of numbers up to one crore or ten millions

- read and write numerals up to 1 00 00 000 Numerals up to 1 00 00 000
- write the number names for the given numerals up to 1 00 00 000. Number names up to one crore or ten millions.

- Write the numerals corresponding to the number names up to one crore Use of eight places (the ones place, tens place, hundreds place, thousands place, ten thousands place, lakhs place, ten lakhs or millions place and crores or ten millions place) for writing numerals up to 1 00 00 000
- write the numerals for the smallest/greatest 5-digit, 6-digit, 7-digit and 8-digit numbers Use of an abacus to represent a number
- find the place value of a digit in a 5-digit, 6-digit, 7-digit and a 8-digit numeral.* Use of place value charts having 5 to 8 columns.
- write the digits of the given numeral in the place value chart Place value of a digit in a numeral
- indicate the place value of a digit in a numeral consisting of 5,6,7 or 8 digits Standard and expanded forms of numerals
- write the given numeral in expanded form
- read and write the numeral, using periods.* Periods namely, ones, thousands, lakhs, crores
- read the given numerals, using periods Periods namely, units, thousands, millions
- write the given numerals, using the periods. Use of international place value chart
- compare two numbers and indicate the greater/smaller number by writing their numerals and using sign > or <.* Ordering of numbers.
- recalls the rules for comparing two numbers Rules for comparing numbers
- rearrange the given numerals in increasing and decreasing order of numbers. Smallest and greatest numbers represented by 5,6,7 or 8 digits
- find the numerals, out of the given numerals, which represent the smallest and the greatest numbers

UNIT: ADDITION AND SUBTRACTION OF NUMBERS

- solve 1- or 2-step problems involving addition of numbers, the sum not exceeding ninety-nine thousand nine hundred and ninety-nine.* Addition of numbers having at the most 5 digits in their numerals
- Identify the 'addends' and the 'sum' in a given addition sum Meaning of the terms 'addend' and 'sum'.
- find the sum of two, three or four numbers by arranging the digits of their numerals in the columns of ten thousands, thousands, hundreds, tens and ones, sum not exceeding ninety-nine thousand nine hundred ninety-nine (without grouping the sums in columns) Column addition involving 3 or 4 addends, sum not exceeding ninety-nine thousand nine hundred ninety-nine
- Addition of numbers given in different groupings, e.g., 7 hundreds + 7 thousands.
- Problems on addition of numbers which are related to situations arising in every day life.

- find the sum of two, three or four numbers by arranging the digits of their numerals in the columns of ten thousands, thousands, hundreds, tens and ones, sum not exceeding ninety-nine thousand nine hundred ninety-nine (involving regrouping in only ones column, then in tens column, then in hundreds column and then in thousands column, and finally in ones, tens, hundreds and thousands columns together).
- solve simple problems related to situations arising in every day life and involving addition of numbers.

solve simple problems involving subtraction of a number from another greater number (greater number not to exceed ninety-nine thousand nine hundred ninety-nine).

Subtraction involving numbers having at the most 5 digits in their numerals.

- identify the 'minuend' 'subtrahend' and the 'difference' in a subtraction sum
- subtract a number from another greater number (not exceeding ninety-nine thousand nine hundred ninety-nine) by arranging the digit of their numerals in columns of ten thousands, thousands, hundreds, tens and ones (without regrouping the numbers of the minuend in different columns).
- subtract a number from another greater number (not exceeding ninety-nine thousand nine hundred ninety-nine) by arranging the digits of their numerals in columns of ten thousands, thousands, hundreds, tens and ones (with regrouping the numbers in different columns of the minuend first in the tens column, then in the hundreds column, then in the thousands column and then in the ten thousands column)
- subtract a number from another greater number involving regrouping in more than one column of the minuend
- subtract a number from a greater number involving regrouping first in ten thousands column, then in thousands column, then in hundreds column and then in tens column.
- solve simple problems related to situations arising in every day life and involving subtraction of numbers.

Meaning of the terms 'subtrahend', 'minuend' and 'difference'

Column subtraction involving two numbers, the minuend not exceeding ninety-nine thousand nine hundred ninety-nine

Subtraction of numbers given in two different groupings, e g , 7 thousands 6 hundreds – 13 hundreds

solve problems involving both the operations of addition and subtraction.

Problems on subtraction of numbers which are related to situations arising in every day life.

Simple problems of 2- or 3-steps related to situations arising in every day life such as buying and selling, total cost of items, etc.

UNIT MULTIPLICATION AND DIVISION

solve 1- or 2-step problems involving multiplication of two or three numbers, the product not exceeding one lakh.

Properties of multiplication

- change one unit into another
- add two or more measures (without and with regrouping the sum).
- subtract one measure from another greater measure (without and with regrouping the greater measure)

UNIT: FRACTIONAL NUMBERS

write two or more fractions equivalent to a given fractional number.

Equivalent fractions as the fractions which represent the same fractional number

- recognise that a fractional number can be represented by more than one fraction
- recognise that all fractions which represent the same fractional number are equivalent to each other
- write two or more equivalent fractions for a given fractional number.
- write an equivalent fraction with a specified numerator/denominator for the given fraction.
- identify the fractions which are in lowest terms from the given set of fractions
- recall the properties of equivalent fractions.
- verify whether the given fractions are equivalent or not
- reduce a given fraction representing a fractional number to its lowest form, i.e., fraction in lowest terms

Some properties of equivalent fractions:

- (i) Equivalent fractions can be obtained multiplying the numerator and the denominator of a fraction by the same number (other than zero), and by dividing the numerator and denominator of a fraction by the same number (other than zero).
- (ii) Two fractions are equivalent if the product of the numerator of the first fraction and the denominator of the second is equal to the product of the numerator of the second fraction and the denominator of the first

Reduction of a given fraction in its lowest form, i.e., fraction in lowest terms

distinguish between different types of fractions

Like and unlike fractions.

- distinguish between like and unlike fractions
- distinguish between proper and improper fractions
- recognise mixed numbers.
- identify mixed numbers.
- identify mixed numbers
- convert the given improper fractions into mixed numbers and mixed numbers into improper fractions.

Proper and improper fractions

Unit fractions

Improper fractions and mixed numbers.

Conversion of improper fractions into mixed numbers.

Conversion of improper fractions into mixed numbers and of mixed numbers into proper fractions.

write a fraction as a division sum and vice-versa

Fraction as division.

- arrange given fractions in increasing/decreasing order of their fractional numbers.* Comparison of two fractional numbers
- convert the given fractions into fractions having the same denominator. Smaller/greater fractional number
 - identify the two fractions, the fractions which represent the greater/smaller fractional number Two fractions having the same denominator and different numerators.
 - identify the mixed numeral and the improper fraction, the one which represents the greater/smaller fractional numbers. Arrangement of the given collection of fractions according to the increasing/decreasing order of their fractional numbers.
 - indicate by using the signs $>$ or $<$ the fraction representing a fractional number which is greater/smaller than the another fractional number.
 - rearrange the given collection of fractions in increasing/decreasing order of their fractional numbers.

UNIT. ADDITION AND SUBTRACTION OF FRACTIONAL NUMBERS

solve every day life problems involving addition of fractional numbers Addition of fractional numbers represented by proper/improper fractions.

- add two or more fractional numbers, i.e , by choosing the smallest common denominator (by determining the LCM of the denominators of the given proper/improper fractions) and find the sum.
- add two or more fractional numbers expressed as mixed numerals by adding first the whole number parts and then by adding the fractional parts together, and finally converting the sum into a mixed number.
- add two or more fractional numbers expressed as mixed numerals by converting each into improper fractions and then adding the improper fractions.

solve every day life problems involving subtraction of fractional numbers. Subtraction of a fractional number written as proper or improper fraction from another fractional number written as proper or improper fraction.

- solve every day life problems involving subtraction of a fractional number from another greater fractional number Subtraction of a fractional number written as mixed number from a greater whole number of fractional number written as mixed number.
- subtraction of smaller fractional number from another greater fractional number by choosing the smallest common denominator (by determining the LCM of the denominators of the given proper/improper fractions) Every day life problems involving subtraction of fractional numbers.
- subtract a fractional number written as mixed number from a whole number or from a fractional number written as mixed number by converting both into improper fractions.

UNIT: DECIMALS

state fractional numbers, amount of money and measures of length, mass and capacity by using decimal notation

- recognise the increase in place value of a digit of a numeral when it moves from right to left by one place, two places and three places
- recognise the decrease in place value of a digit of a numeral when it moves from left to right by one place, two places and three places
- see relationship between decimals and fractional numbers
- write decimals for the given mixed numbers or proper/improper fractions with denominator 10, 100 or 1000
- write fractions for the given decimals
- write the digits of the given decimal in the place value chart.
- read and write the decimals
- write the number names for the given decimals and vice-versa
- identify the place value of a digit in a given decimal
- write the decimal in the expanded form
- identify the equivalent decimals
- express the given amount of money using decimal notation
- express the length/height of an object in the higher unit by using decimal notation
- express the mass of an object in the higher unit by using decimal notation
- express the capacity of a container or the quantity of liquid in the higher unit by using decimal notation

Concept of decimals

Place value chart having columns of ones, tens, hundreds, thousands, tenths, hundredths and thousandths

Reading and writing of decimals

Number names for decimals

Expanded form of decimals

Equivalent decimals

Use of decimals in expressing amount of money, measures length, mass and capacity.

UNIT: LINE SEGMENTS

measure and construct line segments of specific lengths

- compare two line segments using dividers and identify the shorter/longer line segment.

Dividers as another instrument found in the geometry box

Use of dividers in comparing the lengths of two or more line segments.

MINIMUM LEVELS OF LEARNING AT THE PRIMARY STAGE

measure the given line segment in centimetres and millimetres using 15cm scale. Use of 15cm scale to measure the given line segment and also the distance between two given points

find the distance between two given points

construct a line segment of given length, say 3.8 cm Construction of line segments of given lengths in cm and mm.

III. PERIMETER

find the perimeter of rectilinear figures—rectangle, square and triangle Closed curves, simple, closed curves made of only line segments.

identify the given curves, the simple closed curves made of only line segments. Perimeter of rectilinear figures—rectangle, square and triangle.

state the meaning of the term 'perimeter' Perimeter of a rectangle as $2 \times (\text{length} + \text{breadth})$.

find the perimeter of a rectangle, a square and a triangle. Perimeter of a square as $4 \times (\text{length of one side})$.
Perimeter of a triangle as the sum of the lengths of its sides.

find the perimeter of a rectangular field, floor of a room, etc. Determining the perimeter of a rectangular field or park, length of boundary wall, total length of wire required for fencing a rectangular field, etc.

solve simple problems involving perimeter. Problems related to every day life situations involving the use of perimeter.

CLASS V

III. OPERATIONS ON LARGE NUMBERS

read and write numerals up to 99 99 999 and the corresponding number names. Extension of numbers up to ninety-nine crores.

read and write numerals up to 99 99 99 999. Number names up to ninety-nine crores

write the number names for the given numerals up to 99 99 99 999. Use of nine places for writing numeral up to 99 99 99 999

write the numerals corresponding to the number names up to nine hundred ninety-nine million nine hundred ninety-nine thousand nine hundred ninety-nine or ninety-nine crores ninety-nine lakh ninety-nine thousand nine hundred ninety-nine.

find the place value of a digit in a 8-digit and a 9-digit numeral. Use of place value chart having 9 columns

prepare a place value chart and enter the digits of the given numeral in the place value chart Place value of a digit in a numeral of digits.

– indicate the place value of a digit in a numeral consisting of 8 or 9 digits	Standard and expanded forms of numerals
<i>solve simple problems involving operations of addition, subtraction, multiplication and division on large numbers</i>	Periods namely crores, lakhs, thousands, ones/millions, thousands and ones
– find the sum of two or more large numbers, sum not exceeding 99 99 999.	Addition, subtraction, multiplication and division of large numbers (sum not to exceed 99 99 999 in the case of addition, minuend not to exceed 99 99 999, in the case of subtraction; product not to exceed 99 99 999 and multiplier not to exceed 999 in the case of multiplication, and dividend not to exceed 99 99 999 and divisor not to exceed 999, in the case of division).
– find the difference between two large numbers, minuend not exceeding 99 99 999	
– find the product of two large numbers, the product not exceeding 99 99 999 (multiplier not exceeding 999).	
– find the quotient and the remainder when a number is divided by another number not exceeding nine hundred ninety-nine	
– solve problems involving the four operations with large numbers.	Problems involving the four fundamental operations on large numbers, mainly related to situations arising in every day life

UNIT: FRACTIONAL NUMBERS

<i>find the product of two or more fractional numbers.</i>	Multiplication of fractional numbers given in various forms
– find the product of any two fractional numbers	Properties of multiplication of fractional numbers.
– find the product of more than two fractional numbers	(i) The product remains the same when two or more fractional numbers are multiplied in either order
– state the properties of multiplication of fractional numbers.	(ii) While multiplying more than two fractional numbers, the product remains the same even if their groupings are changed
	(iii) The product of a fractional number and one is the fractional number itself
	(iv) The product of a fractional number and zero (0) is zero (0).
<i>divide a fractional number by another non-zero fractional number.</i>	Inverse of a fractional number.
– find the inverse of a non-zero fractional number	Reciprocal fraction of a fraction.
– write the reciprocal fraction of the given fraction, whose numerator and denominator both are non-zero.	Division of a fractional number by another fractional number.
– divide a fractional number by another non-zero fractional number.	Properties of division of fractional numbers:

MINIMUM LEVELS OF LEARNING AT THE PRIMARY STAGE

state the properties of division of fractional numbers	<p>(i) When a non-zero fractional number is divided by itself, the quotient is one</p> <p>(ii) When a fractional number is divided by one (1), the quotient is the fractional number itself</p>
<i>olve simple problems involving four operations on fractional numbers.</i>	Problems involving operations on fractional numbers, mainly related to situations arising in every day life.
IT. DECIMALS	
<i>mpare two or more given decimals and rearrange the en decimals in the increasing/decreasing order of fractional numbers.</i>	Comparison of decimals
compare two given decimals and indicate which one of them is greater/lesser than the other by using sign $>$ or $<$.	
identify and state the rules for comparing decimals.	Rules for comparing decimals.
rearrange the given decimals in increasing order of fractional numbers.	Rearranging the given decimals in increasing/decreasing order of fractional numbers.
rearrange the given decimals in decreasing order of fractional numbers	
<i>ive simple problems involving addition, subtraction, multiplication and division of fractional numbers written decimals.</i>	Addition of fractional numbers written as decimals
	Subtraction of a fractional number from another greater fractional number (both written as decimals).
add two or more fractional numbers written as decimals	Multiplication of a fractional number written as decimals by 10, 100, 1000, etc. and also by a decimal.
subtract a smaller fractional number expressed as decimals from another greater fractional number, also expressed as decimals	
multiply a fractional number written as decimals by a whole number.	
multiply a fractional number written as decimals by 10, 100, 1000, etc.	
multiply a fractional number by another fractional number (both expressed as decimals).	Steps involved in division of a fractional number written as decimals by a whole number, by multiples of 10, 100, 1000, etc and by a fractional number (expressed as decimals)
divide a fractional number written as decimals by a whole number, other than zero	Division of a whole number by a fractional number written as decimals.
divide a fractional number written as decimals by 10, 100, 1000, etc.	

- divide a fractional number by another fractional number (both written as decimals).
- divide a whole number by a fractional number expressed as decimals.
- solve simple problems involving four operations on fractional numbers expressed as decimals.

UNIT: SIMPLIFICATION OF NUMERICAL EXPRESSIONS

simplify numerical expressions involving whole numbers, fractions, mixed numbers, decimals, and operations of addition, subtraction, multiplication and division.

Order of operations for simplifying an expression involving two or more operations

- simplify expressions involving whole numbers and more than one operation
- simplify expressions involving whole numbers, fractions, mixed numbers, decimals and more than one operation.

Simplification of expressions involving whole numbers, fractions, mixed numbers, decimals and more than one operation.

UNIT: ROUNDING NUMBERS

round a number to the nearest ten, hundred and thousand.

Rounding numbers to the nearest ten, hundred and thousand.

- round a number to the nearest ten.
- round a number to the nearest hundred.
- round a number to the nearest thousand.

round a large number to the nearest ten-thousand, lakh, ten-lakh, crore, etc.

Rounding large numbers to the nearest ten-thousand, lakh, ten-lakh, crore, etc

- round a number to the nearest ten-thousand.
- round a number to the nearest lakh
- round a number to the nearest ten-lakh.
- round a number to the nearest crore

round a decimal to the nearest one, tenth, hundredth, thousandth etc

Rounding decimals to the nearest one, tenth, hundredth, thousandth, etc.

- round a decimal to the nearest one.
- round a decimal to the nearest tenth.
- round a decimal to the nearest hundredth.
- round a decimal to the nearest thousandth.

NIT: READING OF RAILWAY AND BUS TIME-TABLES

Read a railway time-table and a bus time-table to find out
 (i) departure/arrival times of the trains/buses at/from
 station/bus stand and (ii) duration of the journey between
 two stations/bus stands.

Railway and Bus Time-tables and their uses

Find out the time of departure/arrival of a train from/at
 a station by consulting the railway time-tables

Finding the time of departure/arrival of a train/bus from/at
 a station by consulting the time-tables.

Find out the time of departure/arrival of a bus from/at
 a bus stand by consulting the time-schedule boards
 displayed at the bus stand.

Find out the duration of journey by a train/bus between
 two stations/cities by consulting railway/bus time-table

Calculation of duration of the journey between two sta-
 tions by consulting the time-tables.

NIT: DISTANCE, TIME AND SPEED

Solve problems involving speed, time and distance.

explain the meanings of 'speed' and 'average speed'

Meaning of the term 'speed'.

find speed/average speed when time and distance are
 given

Relationship among speed, time and distance.

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}} \quad \text{or}$$

find distance when speed and time are given.

$$\text{Distance} = \text{Speed} \times \text{Time} \quad \text{or}$$

find time when speed and distance are given.

$$\text{Time} = \frac{\text{Distance}}{\text{Speed}} \quad \text{or}$$

Problems involving speed, time and distance.

Express speed in different units—km/hour, m/minute and
 /second.

Units of speed

VIT: AVERAGES

Determine the average height/score/rain-fall/attendance,
 etc. from a given data.

Concept of 'average'.

explain the meaning of 'average'.

determine the average height/score/rain-fall/attendance, etc.

Determining the average from the given data.

VIT: BILLS

Read, examine and prepare the bills.

Reading and preparation of bills.

read and examine the bill(s) of the purchases made.

prepare bill(s) for the sale of certain items when their
 rates are given.

UNIT. CIRCLES

explain various terms related to a circle and their relationships.

Circle as a geometrical figure

- identify the circles from the given plane figures
- indicate the centre, radius, chord, diameter, circumference, etc of a circle

Terms associated with a circle—centre, radius, diameter and circumference.

Instrument used for constructing a circle

- state the relationship between the radius and the diameter of a circle.

Relationship between the radius and the diameter of a circle

construct a circle of given radius, using a ruler and a pair of compass.

Construction of circles of given radius

- make patterns and designs with circles

Patterns and designs formed by circles

UNIT. ANGLES

distinguish between a line segment, a line and a ray.

Line segment, line and ray; and their characteristics.

Concepts of a line segment, a line and a ray.

compare two angles and find out which of them has a greater/smaller measure (without measuring the angles)

Concept of angle

- draw an angle with two rays
- identify the vertex and the arms/sides of an angle
- name an angle.

Vertex and arms or sides of an angle

Comparing angles without measuring them

measure an angle with a protractor.

Measuring angles by using a protractor

- measure an angle with the outer scale of the protractor in the clock-wise direction
- measure an angle with the inner scale of the protractor in the anticlock-wise direction.

distinguish between different kinds of angles having different measures.

Kind of angles.

- identify a right angle, an acute angle and an obtuse angle

Characteristics of a right angle, an acute angle, and an obtuse angle

- state the characteristics of a right angle, an acute angle and an obtuse angle.

Classification of angles

- measure the given angles by using a protractor and classify them as right angles, acute angles and obtuse angles.

Construct angles of given measures by using the protractor.

Construction of angles.

draw angles of different measures such as 30° , 45° , 60° , 90° , 120° , 150° , etc. taking one ray in the horizontal direction (both in clock-wise and anti-clock-wise direction)

Construction, of angles of different measures such as 30° , 45° , 60° , 90° , 120° , 150° , etc. by drawing one ray in the horizontal/vertical/oblique direction.

draw angles of different measures taking one ray in the vertical or oblique direction.

NIT: TRIANGLE

Distinguish between different kinds of triangles.

Characteristics of a triangle.

identify the vertices, sides and angles of a triangle.

classify triangles on the basis of sides.

Classification of triangles on the basis of their sides—equilateral, isosceles and scalene triangles

classify triangles on the basis of angles.

Classification of triangles on the basis of angles—right, acute and obtuse triangles

state the properties of a triangle.

Properties of a triangle.

NIT: AREAS

Find out the area of a rectangle and a square.

Concept of 'area'.

explain the meaning of 'area'.

Unit for measurement of area.

state the unit for measurement of area.

Comparison of areas of two plane figures.

find the area of a rectangle whose length and breadth are given.

Finding the area of a rectangle as the product of its length and breadth, i.e., $\text{Area} = \text{Length} \times \text{Breadth}$.

find the area of a rectangular field or classroom floor, etc.

Finding the area of a square as the product of its two sides, i.e., $\text{Area} = \text{Side} \times \text{Side}$

find the area of a square the length of whose side is given

Finding the area of the floor of the classroom, rectangular field, etc.

NIT: VOLUMES

Find out the volume of solids of cubical and of cuboidal shapes.

Concept of 'volume'.

explain the meaning of 'volume'.

state the unit for measurement of volume

Unit for measurement of volume.

find out the volume of a cuboid.

Finding the volume of a cuboid as the product of its length, breadth and height, i.e., $\text{volume of a cuboid} = \text{Length} \times \text{Breadth} \times \text{Height}$.

- | | |
|---|--|
| – find out the volume of a cube | Finding the volume of a cube |
| – find out the volume of a tank (when the dimensions are given) | Finding the volume of a tank, cuboidal/cubical vessel, etc |

UNIT PROFIT AND LOSS

- | | |
|---|--|
| <i>find the profit/loss in transaction</i> | Profit and Loss in a transaction |
| – state the terms 'Cost Price', 'Selling Price', 'Profit' and 'Loss' | Terms such as cost price, selling price, profit and loss |
| – find the profit/loss in a transaction | Determining profit/loss in a transaction |
| – find cost price, selling price, profit or loss when other three are given | Determining cost price, selling price, profit or loss when other three are given |

UNIT. PERCENTAGE

- | | |
|---|---|
| <i>solve simple problems involving applications of percentage</i> | Meaning of 'percentage' |
| – state the meaning of 'percentage' | The symbol % used to represent per cent. |
| – convert a per cent into a fraction | Conversion of fractions, decimals into per cents and vice-versa |
| – convert a fraction into a per cent. | Value of a given per cent of a given quantity/number |
| – convert a decimal into a per cent. | A given number as per cent of another |
| – convert a per cent into a decimal. | |
| – find the value of a given per cent of a given quantity/number | |
| – find what per cent one number is of the other. | |
| – problems involving applications of per cent which are related to situations arising in every day life | Every day life problems involving applications of per cent. |

UNIT: SIMPLE INTEREST

- | | |
|---|---|
| <i>solve simple problems involving calculation of simple interest on the borrowed money.</i> | |
| – identify situations wherein the payment of interest is involved. | Simple interest. |
| – explain the terms 'simple interest', 'principal', 'amount', 'rate of interest' and 'time' | |
| – calculate the interest (on certain amount of money borrowed) in one year at a specified rate of interest. | Calculation of simple interest on the borrowed/deposited money.
Amount to be paid/received after specified time, when the rate of interest is given. |

calculate the simple interest (on certain amount of money borrowed) for a period of two or three years at a given rate of interest

- find the total amount to be paid back after a specified time, when the rate of interest is given.

UNIT. TEMPERATURE

Read a thermometer.

Measuring temperature, using a thermometer.

- state the units for measuring temperature.

Units of measuring temperature—Fahrenheit and Celsius

- read various types of thermometers such as the clinical thermometer, thermometer used for measuring temperature during the day

Conversion of one scale to another.

- convert one scale to another.

V.P. GUPTA
K. RAMACHANDRAN

COMMON CORE COMPONENTS

INDIA'S COMMON CULTURAL HERITAGE

traditional positive health practices such as washing hands before handling food, rinsing mouth after every meal, washing hands before and after taking food, not entering the kitchen with shoes on, etc (The purpose is to further strengthen the positive practices)

UNIT: FAMILY

- state the relationship amongst the different members of the family. Structure of the family, members of one's own family father, mother, brother, sister and grandparents
- compare the number of the members of his/her family and that of families in the neighbourhood
- identify the functions of the members of a family Functions of the various family members.
- help parents in some activities of the family
- take care of the pets kept in the family.
- list the types of food prepared in his/her family. Types of food eaten in a family

COMMON CORE COMPONENTS

SMALL FAMILY NORM

Comparison of the size of families in the neighbourhood

UNIT: HOUSES

- state the ways in which a house is useful to a family Need for a shelter for living-beings; protection from rains, heat, cold and also for security of life, different kinds of shelters for human beings, animals and insects
- identify shelters of different animals, birds, insects, etc
- name some animals that find shelter in houses.
- infer that shelter in the form of houses, nests, holes, etc are necessary for living beings
- distinguish between different kinds of houses, 'kaccha' 'pucca', big and small Types of houses, 'kaccha, pucca; Features that make a house 'kaccha' or 'pucca' and big or small.
- describe the uses of a pucca house
- identify different parts of a house. Different parts of the house-bedroom, kitchen, drawing-room, bathroom, toilet.

UNIT. SCHOOL

- | | |
|---|---|
| <ul style="list-style-type: none"> — identify the building of a school — classrooms, headmaster's office, water room, toilet, etc — state the uses of different parts of the school — state the uses of different articles in the school — take care of articles/equipment in the classroom — demonstrate orderly habits and good manners — take care of the plants in the school garden — participate in the functions organised in the school. | <p>Parts of a school building and their uses — playground headmaster's office, classrooms, library, water room, garden, toilet</p> <p>Articles in the school — black-board, chalk, charts, maps, globe, play material, games material, mats (benches), chair, Table, musical equipment, slates, dusters, books, exercise books and their uses.</p> <p>Characteristics of good behaviour such as punctuality, standing in a queue, keeping the school clean, showing sense of cooperation tolerance, etc</p> |
|---|---|

COMMON CORE COMPONENTS

PROTECTION OF THE ENVIRONMENT

Care of plants in the school garden.

NATIONAL IDENTITY

National Anthem and National Festivals; Poems related to patriotism, Stories related to Chacha Nehru and Mahatma Gandhi.

UNIT: OUR NEIGHBOURHOOD — NATURAL SURROUNDINGS

- | | |
|---|---|
| <ul style="list-style-type: none"> — identify the natural features in the neighbourhood like hills, rivers, plains, ponds, etc — indicate the direction of rivers, ponds in relation to one's house/school, in terms of left, right, in front and at the back. — state the distance of the pond, hill, river, etc. in terms of far, near, very far, very near, etc | <p>Natural features in the neighbourhood such as river (s), hills, ponds, plains, etc</p> <p>Directions in terms of left, right, front, back.</p> <p>Estimates of distance in terms of far, near, very far, very near, etc.</p> |
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UNIT PLANTS IN THE NEIGHBOURHOOD

- | | |
|---|--|
| <ul style="list-style-type: none"> — recognise and name some common plants in the neighbourhood which grow into tall trees, which grow into tall trees, which grow as creepers, which bear fruits and seeds, etc | <p>Names of common plants available in the locality, varieties of plants such as trees, herbs or shrubs, creepers; Most of the plants bear leaves branches, flowers, fruits and seeds.</p> |
|---|--|

COMMON CORE COMPONENTS

NATIONAL IDENTITY

Five common plants in our country, e.g., 'Neem', 'Jamun', 'Peepal' and 'Baniyan', etc

PROTECTION OF THE ENVIRONMENT

Taking care of plants in and around the house and the school, Planting saplings at home and school, avoiding trampling of plants and indiscriminate cutting of plants

- compare plants according to observable characteristics such as size, shape and colour of leaves, flowers etc Plants vary in shape, size and colour of their parts such as leaves, flowers, fruits, etc

UNIT ANIMALS IN THE NEIGHBOURHOOD

- recognise some characteristics of common animals in the locality Animals vary in shape of their body parts; Body parts of common animals.
- recognise and name some common animals in the locality.

COMMON CORE COMPONENTS

PROTECTION OF THE ENVIRONMENT

Harmful effects of indiscriminate killing of animals, Care of domestic animals and plants; Protection of animals against diseases Stories about our wild life, tiger — our national animal; Stories of animals as friends of man.

- compare animals according to observable characteristics such as size, body parts, type of food they eat etc There is a great variety of animals around us, Animals vary in size, shape of their body parts, etc.

UNIT PLACES/INSTITUTIONS OF IMPORTANCE IN THE NEIGHBOURHOOD

- identify houses of worship. Temple, mosques, church, gurudwara in the neighbourhood.
- identify places of recreation, market place, post office, school, etc. in the neighbourhood Places of recreation, market place, post office, school, in the neighbourhood.
- identify institutions which provide facilities like dispensary, hospitals, panchayat ghar, etc Places which provide facilities such as a dispensary, hospitals, panchayat ghar

UNIT. TRANSPORT

- identify different means of transport in the neighbourhood Means of transport — bullock cart, tonga, bicycle, bus, car, rickshaw, auto-rickshaw, train, etc

NIT: OCCUPATIONS OF THE PEOPLE

- state the occupations of the people in the neighbourhood Occupation of the people in the neighbourhood-farming, shop-keeping, carpentry, blacksmithy, etc
- identify the occupations of the different people in the village/locality

NIT: WATER

- identify the uses of water in daily life. Water — its uses in daily life such as for drinking, washing clothes and utensils, bathing, cooking and utensils, bathing, cooking, etc , Importance of water for the survival of man, animals and plants
- compare water from different sources in terms of colour, taste and smell Common sources of water such as rivers, streams, tanks, wells, springs, etc.
- distinguish fresh/clean water from polluted/dirty water on the basis of their colour, odour and contents. Characteristics of fresh clean water, Characteristics of polluted dirty water, Colour and odour/smell of polluted water; Sources of fresh water and polluted water in the locality.
- identify the causes of pollution of water Main causes of pollution of water such as bathing, washing, throwing garbage in the source of water etc.; Use of polluted water leads to various diseases.

COMMON CORE COMPONENTS

PROTECTION OF THE ENVIRONMENT

Observation, comparison of different sources of water, Need to keep the water clean at the source level; Ways to keep water free from pollution, Safe handling of drinking water

INIT: EARTH

- identify the natural/geographic features of the earth as found in a village/locality Common features of the surface of the earth such as ocean, rivers, streams, mountains, hills, valleys, plains, marshy land, deserts, etc.
- identify the different kinds of rocks found in the locality Rocks of different shapes, sizes, texture and colours.
- recognise the different kinds of animals and plants available in the locality. Names of some of the animals, plants, birds and insects, found on the surface of the earth.
- discriminate between different natural and man-made objects found in the locality. Some observable similarities and differences among common animals, common plants, birds and insects found on the surface of the earth, Natural objects such as land rocks, plants, animals, etc.; Man-made objects such as buildings, roads, bridges etc.

COMMON CORE COMPONENTS

PROTECTION OF THE ENVIRONMENT

Use of natural resources by man Man's activities have changed the surface of the earth

UNIT: THE SKY

- compare the sky during the day and night

Objects seen in the sky during the day, e.g., sun and things seen during the night e.g., moon and stars

Changes in the sky at different times on a day and on different days in a week

- infer that superstitions related to heavenly bodies are not true.

Negation of superstitions — stories related to sun, moon and other heavenly bodies.

- observe the changes that take place during a day in the sky such as, clear, partly cloudy, cloudy; colour and movement of the clouds.

Colour and movement of clouds at different times of the day

CLASS II

UNIT: HUMAN BODY

- classify children according to observable characteristics such as colour of eyes, colour of hair, height and sex.

Similarities and differences among people in terms of body parts and physical features such as height, sex, colour of eyes, colour of hair, etc

- identify the changes that take place in terms of height and weight of children as they grow

Growth in children — increase in height and weight.

- practise habits of personal cleanliness and keep different parts of the body clean.

Personal cleanliness, comfortable clothing, proper ways to protect eyes, ears and other sense organs.

- see relationship between practising desirable habits of personal health and hygiene and maintenance of good health.

Desirable habits of personal health and hygiene help us to keep fit.

Proper posture for reading, sitting and standing.

- practise proper toilet habits

Importance of adequate rest, sleep and exercise for maintenance of one's health.

UNIT: FAMILY

- compare his/her family with other families in the neighbourhood.

Importance of proper use of urinals and latrines in the school, house and community

- infer that size of the families varies.

Size of the family, number of members in one's own family and in the families in the neighbourhood. Small and big families.

COMMON CORE COMPONENTS

SMALL FAMILY NORM

Awareness of the effects of the size of families — big and small on food, clothing, education, etc

- | | |
|--|---|
| - state that a variety of foodstuffs should be eaten to keep healthy. | Vegetables, cereals, meat, etc used as components — their importance for health |
| - state the importance of eating clean food | Importance of clean food |
| - keep food items free from dust, flies, etc. | |
| - practise proper eating habits | Importance of proper eating habits |
| - assist family members in organising recreational and cultural activities | Recreational and cultural activities in the family — music, dance, religious festivals, ceremonies, etc |

COMMON CORE COMPONENTS

INDIA'S COMMON CULTURAL HERITAGE

Names of the famous dances of India — Bharat Natyam, Kathak, Kathakali, Manipuri, Odissi

Important festivals of the country: Holi, Diwali, Id, X-mas, Gurupurab, Pongal, Dussehra, etc.

- | | |
|--|---|
| - name the dress/worn by the member of family | Dresses worn by the members of family. |
| - identify the materials used for making clothes. | Materials used for making clothes such as wool, cotton and synthetic fibre. |
| see relationship between types of clothes worn and the kind of climate | Cotton clothes are suitable for summers and woollen clothes for winters. |
| take care of his/her clothes | |
| - put on neat and clean clothes. | Importance of wearing clean and neat clothes. |

VIT HOUSES

- | | |
|--|---|
| identify the materials used in the construction of a house | Materials used for construction of houses such as mud, bricks, stones, wood, bamboo, leaves, branches of trees, tin sheets, cement, etc |
| - identify the various workers who help in constructing the houses | A variety of workers help in construction of houses such as mason, carpenter, plumber, etc |
| - identify the major features of a good house. | Features of a good house — ventilation, proper lighting, drainage, etc. |

— keep the house clean

Ways of keeping houses clean

UNIT: SCHOOL

— state the functions of the headmaster, teachers, clerks, etc

Functions of the headmaster, teachers, clerks, etc. of the school

— take care of equipment, materials, articles in the school

— keep the classroom and the surroundings clean.

— assist peer groups and teachers in organising school functions

School functions like Annual Day, Independence Day, Republic Day, Gandhi Jayanti, etc

— recite patriotic poems

COMMON CORE COMPONENTS

NATIONAL IDENTITY

National festivals. Independence Day, Republic Day, Gandhi Jayanti

Patriotic Poems

PROTECTION OF THE ENVIRONMENT

Importance of keeping the school and its surroundings clean.

UNIT: OUR NEIGHBOURHOOD — NATURAL SURROUNDINGS

— indicate the directions of a place with reference to one's house/any other place in terms of North, South, East and West.

Directions — North, South, East and West (elementary ideas)

— state the uses of rivers, hills, ponds, forests, etc

Natural surroundings; uses of rivers, hills, ponds, forests, etc

UNIT: PLANTS IN THE NEIGHBOURHOOD

— classify plants according to observable characteristics, such as size, colour, size and smell of leaves and flowers, etc

There is a great variety of plants grown in the locality, Similarities and differences among plants.

Classification of plants in the locality into trees, shrubs or herbs,

Variety of leaves and flowers and their classification according to size, colour, smell, etc.

— infer that the life span of different plants varies.

Plants crops grown in the fields such as paddy, wheat, etc. which complete the life-cycle in one season.

Plants and trees like mango trees which have a long life span

Names and characteristics of 10 common plants such as garden plants, food plants, avenue plants, crops, etc

— state the uses of some of the plants in the locality.

Uses of plants in the locality such as for food, decoration, timber, fuel, etc

COMMON CORE COMPONENTS

NATIONAL IDENTITY

National flower of our country — Lotus

PROTECTION OF THE ENVIRONMENT

Man depends on plants for various needs such as food, clothing and shelter. Plants should be protected. Tree planting activity. Care of plants in the school and at home.

UNIT: ANIMALS IN THE NEIGHBOURHOOD

— classify animals according to observable characteristics such as shape of body parts, number of feet, type of food they eat, habitat, etc.

Similarities and differences among animals (in terms of body parts, habitat and body movements)

Classification of animals according to the number of feet, food they eat, etc., Domestic, pet and wild animals.

— state the uses of some of the animals in the locality.

Use of animals. Animals which provide milk, eggs, meat, wool, leather, etc., Use of animals, dungas manure.

UNIT: LIFE OF THE PEOPLE IN THE NEIGHBOURHOOD

— recognise and name some occupations of the people in the neighbourhood like farming, gardening, dairy-farming, poultry, carpentry, pottery, blacksmithy, etc.

Occupations of the people in the neighbourhood — farming, gardening, dairy farming, poultry, carpentry, pottery, blacksmithy, etc.

— recognise the agricultural products grown/available in the locality.

— see relationship between products resulting from different occupations and life in the neighbourhood.

Products of various occupations such as agriculture, dairy farming, carpentry, etc

— participate in the celebration of important festivals in the community

Festivals celebrated in the community

— describe the weather on a day as cloudy, sunny and rainy.

Elementary idea of change in weather

— identify the rainy, winter and summer seasons and their effects on the life of the people.

Elementary idea of the rainy, winter and summer seasons and their effects on the life of the people.

— participate in activities undertaken for cleaning and keeping the surroundings clean.

Need for cleanliness in the locality.

- identify the causes of insanitary conditions in the locality

COMMON CORE COMPONENTS

NATIONAL IDENTITY

Stories related to the festivals celebrated in the community.

PROTECTION OF THE ENVIRONMENT

Importance of keeping the surroundings clean
Causes of insanitary conditions.

UNIT: TRANSPORT

- classify the means of transport on the basis of their characteristics such as animal driven, machine driven, slow, fast
Different kinds of means of transport — animals driven, machine driven, slow, fast. Uses of means of transport.
- observe the road safety rules
Road safety rules
Importance of observing road safety rules

UNIT: WATER

- take steps for keeping water clean and unpolluted
Water gets polluted in different ways
Water can be purified by boiling, filtering.

COMMON CORE COMPONENTS

PROTECTION OF THE ENVIRONMENT

Causes of pollution of water, such as, bathing, washing, cleaning, urinating and defecating near the source of water. Different methods of preventing pollution of water

Safe storage and handling of drinking water at home and in school.

UNIT: EARTH

- recognise the ways in which human beings have changed the face of the earth
Man-made features on the surface of the earth like roads, bridges, canals, buildings, railway lines, etc.
Changes brought about by man on the surface of the earth (e.g. reduction in land covered by forests, increase in the number of buildings, etc.)

- trace the map of the district
- recognise the monuments and places of interest in the district.
- state the stories related to the historical monuments.
- participate in local festivals.

COMMON CORE COMPONENTS

HISTORY OF INDIA'S FREEDOM MOVEMENT

Stories of the Freedom Fighters of the district (if any)

Stories related to the National Festivals, i.e. Independence Day, Republic Day, Gandhi Jayanti.

UNIT: LIFE IN DIFFERENT PARTS OF OUR STATE

- locate the boundaries of his/her own state in the map

Geographical setting of our state — location, physical features, mountains, rivers, valleys, plains, plateau, Natural resources, agricultural crops Development programmes in the State Means of transport and communication — their effect on Trade and Commerce
- distinguish between weather and climate

climatic conditions of the state
- describe the climate of the state
- name natural resources found in the state
- name crops grown in the state
- name the means of transport and communication available in the state.
- identify the effects of climate on the ways of living of the people in different parts of the state
- describe occupations, food, clothing, shelter of the people of the state.

Major occupations of the people of the State Food, clothing, shelter of the people of the state Language(s) of the state.
- name the language spoken in the state
- locate the following in the map of the state
 - mountains, peaks, rivers, valleys, forests.
 - areas/places of various agricultural crops, minerals, industries

- roads, railway lines, air routes
- dams on rivers
- sites of developmental projects

COMMON CORE COMPONENTS

HISTORY OF INDIA'S FREEDOM MOVEMENT

Stories of some important personalities and also of the freedom fighters of the state and of the country

INDIA'S COMMON CULTURAL HERITAGE

Music and dances of the state.

Festivals of the state and also those which are celebrated in the state as well as in other parts of the country

Stories related to the local festivals.

Monuments of the state and also the monuments having national importance — stories related to these monuments

The language(s) spoken in the state

OBSERVATION OF SMALL FAMILY NORM

Position of population of the state in relation to population of the country, problems of over-population

NATIONAL IDENTITY

State is part of the country

MAJOR IDEAS

Geographical and climatic factors influence the ways of living of the people-their food habits, dresses, occupations and festivals

the developmental projects have brought prosperity to the State

Modern methods of farming and industries, and means of transport and communication have brought changes in the life of the people

People have made many sacrifices for the achievement of freedom

It is necessary to check the population growth in the country to achieve the objectives of the welfare of the people

Our state is part of the whole country. Language, festivals, monuments, music, dance, etc of the state belong to the entire country

UNIT. CIVIC AMENITIES THAT MAKE OUR LIFE COMFORTABLE

- | | |
|--|--|
| <ul style="list-style-type: none"> — State the functions performed by fair price shops, banks, dispensaries, hospitals and schools, etc | <p>Services rendered by the following
Fair Price Shops, Banks, Dispensary, Primary Health Hospitals, Veterinary hospitals, Panchayat/Municipal Committee</p> |
|--|--|

COMMON CORE COMPONENTS

EGALITARIANISM, DEMOCRACY AND SECULARISM

Local bodies like Village Panchayat, Municipal Committee are components of democratic set up
Composition and functions of elections to these bodies

MAJOR IDEAS

People working in local bodies, banks, hospitals, etc. make our life comfortable

As a good citizen it is our duty to cooperate with the people who are engaged in making our life comfortable

UNIT. OUR HERITAGE — LIFE OF EARLY MAN

- | | |
|--|---|
| <ul style="list-style-type: none"> — compare the characteristics of the life of man during the early age with those after the discovery of fire, metals and etc — identify the pictures of tools, implements, houses, carts, etc used by the early man — arrange in chronological order/sequence the changes that took place in the pattern of man's life | <p>Food and shelter of the early man. man as food gatherer Use of stones as tools Discovery of fire-uses of fire Story of agriculture and the rise of settled life Story of the discovery and use of metals and beginning of city life. Story of transport Invention of the wheel — its impact on transport system.</p> |
|--|---|

MAJOR IDEAS

The discoveries and inventions of man in early times have played an important part in improving the life of man

Human beings have always tried to improve their life by trying to understand nature and making use of the gifts of nature

CLASS IV

Our Country India*UNIT PHYSICAL FEATURES OF THE COUNTRY*

- state the characteristic of physical regions of the country Physical regions of India Northern Mountains — the Himalayas and North Eastern Hills Rivers originating from northern mountains
- locate the physical regions of India on the map of the country Northern great Plains — its major rivers
- identify the effects of the physical features of the country on the climate of the regions Southern Plateau — Hills and valleys on the plateau
- compare the regions of the country with regard to their agricultural growth Coastal plains
Islands
- name the main seasons of the country Climate-Main seasons.
- Compare the climatic conditions of various regions of the country

COMMON CORE COMPONENTS

NATIONAL IDENTITY

The different physical features of our country are complementay and supplimentary to each other

MAJOR IDEAS

Our country has distinctive physical divisions which provide almost all the types of land forms

The Himalayas are the greatest and the highest mountains in the world which have proved to be a boon to the whole country in many ways

The plains of Northern India are extremely levelled and are one of the most productive agricultural regions in the world.

The southern plateau is a stable land mass of very ancient rocks which is source of enormous mineral wealth

The coastal plains are by and large narrow areas hinging the southern plateau which have rich agricultural land and have provided harbours for our country

The great rivers of India make big valleys and help irrigate large areas of land

UNIT: NATIONAL RESOURCES AND THEIR USE

- | | |
|---|--|
| — state the meaning of the term natural resources | Natural Resources of the country |
| — name various natural resources of the country | |
| — name various kinds of soils found in the country and also name the regions where these are found | Soil — kinds of soil. Distribution of different kinds of soil in the country |
| | Conservation of soil. |
| — classify the soils with regard to their fertility | |
| — state the methods through which fertility of soil can be increased | |
| — state the methods of conserving soil | |
| — locate on map areas of different kinds of soil. | |
| — name the kinds of forests available in the country | Forests: Kinds of forests — their distribution in the country
Uses of forests |
| — describe the uses of the forests | |
| — identify the effects of destroying forests | |
| — state the methods of preserving forests. | Conservation of forests. |
| — name various kinds of wild animals found in the forests of the country. | |
| — give reasons for conserving the wild life in the country. | Wild life in the forests Need of preservation of wild life |
| — locate distribution of various kinds of forests and Wild Life sanctuaries on the map of the country | |
| — state the uses of water | Uses of water in daily life, in irrigation |
| — state the utility of dams on rivers | Dams constructed on rivers, their importance |
| — list the names of important dams of the country. | Pollution of water — its effects Methods of keeping the water clean |
| — identify the relationship between construction of dams and development of the area. | |
| — locate different dams on the map | |
| — state the ways of keeping the water clean | |

- name the various cattle and their uses Cattle wealth Various types of cattle found in the country Use of cattle, programmes of improvement of cattle breed
- state how good quality of cattle is being developed in the country

COMMON CORE COMPONENTS

OBSERVANCE OF SMALL FAMILY NORM

Human Resources: Population-improving the quality of population through better food, health facilities, education, etc and through observance of small family norm

Relationship between size of population and programmes of welfare of the people of the country.

- name the crops grown in the country Use of resources in agriculture and industries, various crops grown in the country.
- name various kinds of industries in the country
- classify industries into heavy, medium and small
- locate areas on maps where various crops are grown
- identify on map, places where various industries are located Kinds of industries, their distribution in the country
- establish relationships between the location of industries with distribution of natural resources in the country

MAJOR IDEAS

India is rich in natural resources like soil, forests, water, minerals which can be utilised to bring about all round progress and prosperity to all parts of the country

Some resources such as water, plants and animals are replenishable while others such as minerals are non-replenishable

Natural resources need to be conserved for better utilization

With rapidly growing population in our country, the pressure on land and on other resources is increasing tremendously

Growth of population has to be controlled

UNIT MEANS OF TRANSPORT AND COMMUNICATION

- collect information about the modern means of transport. Kinds of transport-land, water and air, used in the country

- classify means of transport in the country into land, water and air
 - classify the fast moving and slow moving means of transport.
 - locate the roads, the railway lines, the air and sea routes connecting various places and parts of the country on the map of India
 - identify the effects of faster ways of transport and communication on the life of the people and on trade and commerce
- Roads and railways — trunk routes, water ways, airways Effects of fast transport on trade and commerce
- Means of communication. Post and Telegraph, telephone, radio, television, newspaper Their effect on work and life of the people and on trade and commerce

COMMON CORE COMPONENTS

NATIONAL IDENTITY

Growth of transport and communication have led to better cooperation among various regions, awareness of cultural heritage, creating ideas of oneness.

MAJOR IDEAS

Modern means of transport and communication have made different parts of the country interdependent and have brought them closer

Faster means transport and communication have helped in rapid growth of trade.

Means of transport and communication have helped to know the cultural heritage of various parts and to share ideas and problems thus creating the ideas of oneness.

UNIT: LIFE IN DIFFERENT PARTS OF OUR COUNTRY

- describe the life of the people in different parts of the country.
 - see relationship between the physical features and climate of a state/region and its effects on the life of the people.
 - see relationship of the developmental programmes carried out in the country and the life style of the people.
 - compare the food, dresses, shelters, dances, music, customs and festivals of different parts of the country
 - identify the influence of ones own language, customs, food, festivals, etc. on other parts of country.
- Life of the people in various parts of India — food, clothing, shelter, occupation, languages, festivals, monuments, places of interests in different states, group of states/regions of the country.
- Effects of physical features and climate on the life of the people.
- Inter-relationship between different parts of our country

MAJOR IDEAS

Physical features, climate and developmental projects effect the life style of the people.

Different ways of living in different parts of the country add to the variety and richness of our life.

UNIT THINGS THAT MAKE OUR LIFE RICH AND BEAUTIFUL

- | | |
|--|--|
| — identify the common features of the life of the people of the country | Aspects of commonality and variety in our languages, festivals, dances, music, arts, architecture, religions and thoughts — contribution of various peoples and religions in enriching these aspects |
| — infer that all variety belongs to our national life — we as a nation own these | Preservation and further enriching these aspects |
| — infer that various people and regions have made the life of the country rich and colourful | |
| — infer that good aspects of life inherited from the past are to be preserved while new aspects have to be added | |
| — name the fifteen languages of the country | Various aspects of our life Language — fifteen main languages Large number of languages spoken in the country. |
| — classify the festivals into seasonal and religious | Festivals — Festivals related to seasons like Baisakhi, Behu, Holi, Pongal, Onam Festivals related to religions — Diwali, Ganesh Puja, Dusshera, Id, Christmas, Budhapurnima, Mahavir Jayantik, Guru Nanak's birthday |
| — differentiate between the classical and folk music and dances of the country. | Dance and Music. Classical music-Karnatak and Hindustani; Folk Music — all over India, Classical dances — Bharat Natyam, Odissi, Kathakali, Manipuri, Kuchipudi, Folk dances — Ghumar, Bhangra, Garba, Kummri, Burrakatta, etc |
| — describe the main features of the paintings of the past | Paintings — Ajanta, Mughals and Rajpur and modern paintings |
| — name the architectural monuments of the past | Architecture — Temples of Konark, Khajurahu, Tanjore, Dilwara, Qutab Minar, Gol Gumbuz, Jama Masjid of Delhi, Taj Mahal, Forts at Delhi and Gwalior. |
| — describe the main features of architecture of the past. | |
| — locate the places on the map famous for historical monuments. | Churches of Goa, Victoria Memorial, Rashtrapati Bhawan, New Buildings — Legislative Assembly Building at Bombay, Vidhan Souda of Bangalore, Bahai Temple at Delhi, etc |

- name the important religions of the country Major religions in the country — Hinduism, Jainism, Buddhism, Islam, Christianity, Zoroastrianism
- state the teachings of different religions Teachings of Shankaracharya, Swami Vivekanand, Mahavira, Buddha, Prophet Mohammad, Christ, Guru Nanak, and Zoroastar
- identify the common teachings of all religions Contribution of Scientists — Arya Bhatt, Charak, Sarasut, C V Raman, J C. Bose, Homi Bhaba
- state the contributions of some social reformers, scientists and rulers Contributions of rulers — Ashoka, Akbar, Krishna Dev Raya

MAJOR IDEAS

The life of the people living in different parts of our country has many commonalities

Variety in our languages, religions, traditions, festivals, dances and music, etc makes our life rich and beautiful.

Various aspects of our life have developed as a result of contributions made by people in all parts of our country and in different periods of history

Ideas, thoughts and activities of some personalities have given us inspiration to make our life better.

Contributions of social reformers — Kabir, Raja Ram Mohan Roy, Sir Syeed Ahmed, Ramabai Ranade

UNIT HOW WE GOVERN OURSELVES

- describe in brief the background story of making of our constitution. Brief story of making of our constitution
- explain briefly the meanings of the terms democracy, secularism and socialism. Our national goals, Democracy, Secularism and Socialism
- list the Fundamental Rights, Directive Principles and the duties of citizens Fundamental Right, Directive Principles, Basic duties of a citizen
- describe the composition of state Government and Union Government and also their functions State Government, Union Government — Formation and functions.

COMMON CORE COMPONENTS

REMOVAL OF SOCIAL BARRIERS

Election of representatives for Union and State Governments. All citizens participate in elections irrespective of caste, religion, and sex

NATIONAL IDENTITY

Our National Symbols — their significance

MAJOR IDEAS

The framework of the constitution was prepared by the people of India themselves through their representatives

The people of India are engaged in building a democratic, secular and socialist society

The people of India enjoy certain fundamental rights to live a good and respectable life

The enjoyment of these rights enjoins upon us some basic duties

The State Government and the Union Government are formed by the elected representatives of the people of the country.

No discrimination is made on the basis of caste creed and sex in electing the representatives in the Government

Our constitution and our national symbols reflect desire and determination to remain united and independent

CLASS V**Our Country and the World*****UNIT STUDYING THE GLOBE AND THE MAP OF THE WORLD***

— locate Equator, Poles, Hemispheres on the Globe	The Globe-Model of earth Equator, Poles, Hemispheres
— use latitudes and longitudes in locating places on map.	Use of circular lines on the globe — latitudes and longitudes
— locate India in terms of latitudes and longitudes	Important latitudes on the globe — Equator, Tropics, Arctic and Antarctic circles
— interpret the legend, colour, symbols etc while reading the map.	Position of India in the context of latitudes and longitudes.
— locate the countries, continents, seas, etc, on the map of the world	Language of the map — legends, colours, symbols, directions, etc on the map.

MAJOR IDEAS

The earth on which we live has a round shape. Globe is the best model of the earth

Imaginary circular lines have been drawn on the globe to help us to locate places accurately

India is located in the Northern Hemisphere. Equator is to its south and the Tropic of Cancer runs through its central parts.

UNIT WAYS OF LIVING IN DIFFERENT PARTS OF THE WORLD

- | | |
|--|--|
| <ul style="list-style-type: none"> — list the factors influencing the climate of a place — locate in the map of the world regions like Equatorial, Monsoon, Tundra, Hot Deserts and Temperate Grasslands. — describe the life of the people living in different parts of the world — give reasons of different ways of living in different areas. — compare the life of the people living in different parts of world | <p>Factors influencing the climate of a place Effect of climate on ways of living.</p> <p>Life of the people (food, clothing, shelter, occupations etc.) in some parts of the world like</p> <ol style="list-style-type: none"> 1 Equatorial region 2 Tundra 3 Hot deserts 4 Temperate grasslands |
|--|--|

MAJOR IDEAS

Varied physical and geographical factors influence the climate of a place

Climatic conditions of a place largely affect the ways of living of the people.

Due to varied climatic conditions in the world the ways of living of the people vary from region to region in the world.

Different ways of living add to the variety and richness of our world.

Man has been an important factor in shaping the environment and changing the conditions of the life.

UNIT MEANS OF TRANSPORT AND COMMUNICATION IN THE WORLD

- | | |
|--|--|
| <ul style="list-style-type: none"> — name the means of land, sea and air transport — describe the development of the means of transport on land, water and air — locate on the world map important land, sea and air routes | <p>Means of transport on land, water and in air. Brief history of each</p>

<p>Land, sea and air routes joining different countries of the world with special reference to India</p> |
|--|--|

- locate routes connecting Indian cities with other cities of the world
- identify the effects of modern means of transport on international trade and commerce and on the life of the people Impact of rapid means of transport on international trade and ways of living of the people
- describe the improvement in telegraph, telephone, television, radio etc. Means of communication — progress in telegraph, telephone, radio, television with special reference to India
- describe the use of artificial satellites in communication Use of artificial satellites in Communication — INSAT
- identify the effects of modern means of communication on the life of the people—advantages as well as disadvantages Effects of modern means of communication of life and thinking of people — consumer education

MAJOR IDEAS

Improved means of transport and communication have brought different parts of the world closer influencing the ways of living and thinking

Modern means of transport and communication have helped in developing trade and industries and have made cooperation amongst people of the world possible. At the same time these have increased the dangers of global wars

The dangers of misuse of communication for propaganda, conditioning of mind etc should be avoided.

UNIT UNDERSTANDING THE FAST CHANGING WORLD

- describe the development of the script and number Achievements of man through the ages Stories of script and number, invention of printing press, making of paper.
- describe the impact of the invention of printing press and of paper on growth of knowledge. Relationship of knowledge and education with development and progress.
- identify relationship between knowledge, education and progress Story of man's fight against diseases Treatment of diseases, new instruments, medicines — development in surgery Prevention of diseases — vaccination — its story Basic health care—personal and environmental cleanliness
- narrate the story of man's fight against diseases
- compare some outdated and modern methods of treatment of diseases.
- identify the relationship between the progress in medicine and population explosion. Population explosion — solution of the problem.
- infer that small families are necessary to control population

- describe the impact of discovery of metals on making of tools and in turn on agriculture
 - identify the relationship between the invention of steam engine and speedy growth of industry.
 - describe the impact of industrial growth.
 - name the sources of energy that could make the machine run.
 - describe the story of discovery of electricity.
 - name the new sources of energy which are not exhaustible.
 - state ideas and thoughts of great personalities who thought of improving the life of the people
- Story of man's efforts to produce more development of tools and machines Progress from stone tools to metals tools — inventions of machines Invention of steam engine Industrial Revolution
- Search for sources of energy-coal, mineral oil, discovery of electricity.
- Search for new sources of energy — water, air, sun
- Stories related to man's efforts to become better human being: Ideas and thoughts of thinkers and philosophers against oppression and exploitation — Socrates, Lincoln, Karl Marx, King Martin Luther, Mahatma Gandhi.

MAJOR IDEAS

Human beings have always been trying to improve their living conditions.

Discoveries and inventions made by man at different points of time have brought great changes in the life and thinking of man.

A number of eminent thinkers have given ideas for fighting against oppression and injustice

UNIT. MAJOR WORLD PROBLEMS

- state the major problems the world faces today.
 - narrate the back ground story of formation of UN.
 - list the objectives of UN.
 - describe the contribution of the various agencies of the UN.
- Major World Problems-Wars, poverty, disease, illiteracy over-population, etc
- Efforts for solving the World problems-formation of United Nations, its objectives
- Contribution of UNICEF, WHO and UNESCO with specific reference to India

COMMON CORE COMPONENTS

NATIONAL IDENTITY

India's role in solving world problems — contribution to the activities of UN.

Non-Aligned Movement The objectives of the Movement India's contribution to the movement.

MAJOR IDEAS

The whole world is facing many problems; maintenance of peace is the most important one

Many countries of the world are poor, overpopulated and face the problems of illiteracy, disease, shelter and food

Cooperation among nations is essential for the development of each nation, for preservation of world peace and for promoting welfare of the mankind

The United Nations is a family of nations which strives to promote peace and cooperation among nations

India has made a significant contribution towards achieving the objectives of UN

India has played an important role in initiating and promoting the Non-Aligned Movement

UNIT. HISTORY OF INDIA'S FREEDOM MOVEMENT

- state the causes of capturing power by the British in India. India coming under British rule Effects of British rule on social and economic life of the people Revolt of 1857.
- give reasons of people's dissatisfaction against the British rule
- describe the causes and effects of the Revolt of 1857
- list the objectives of formation of the Indian National Congress Formation of Indian National Congress in 1885 Partition of Bengal Swadeshi Movement Early leaders: Dadabhoi Naoroji, Gopal Krishna Gokhale, Badruddin Tayyabji, G. Subramani Aiyer, Bal Gangadhar Tilak, Bipin Chander Pal, Lala Lajpat Rai.
- give reasons of partition of Bengal.
- state the characteristics of the Swadeshi Movement
- name the leaders of the early movement
- compare the ideas of different leaders of the early movement.
- describe the role of Mahatma Gandhi in making the movement a mass movement. Appearance of Mahatma Gandhi on political scene
- compare the nature of movement started by Mahatma Gandhi with that of the early movement Changes brought by Mahatma Gandhi in the National Movement
- infer that a movement can be successful with the support of the masses only.

- describe the expectations of the Indians after the First World War
- narrate the atrocities committed by the British
- describe various movements
- compare the nature of various movements.
- give reason of launching of Quit India Movement
- describe the incidents immediately preceding the independence
- name the leaders of the freedom struggle at later stage
- infer that our leaders have made tremendous sacrifices during freedom struggle
- infer that the freedom is very valuable to us

Outbreak of the first world War and the reaction of Indian leaders. Repression by the British

Jalianwala Bagh Tragedy, Non-cooperation movement, demand of Purna Swaraj — Salt Satya Graha and the role of women in it Revolutionaries, their role in freedom struggle

Outbreak of the Second World War and Quit India Movement Role of INA Attainment of Freedom

Partition of the country.

Leaders like Pandit Jawaharlal Nehru, C. Rajgopalachari, Subhas Chandra Bose, Maulana Azad, Sarojini Naidu, Sardar Patel, Bhagat Singh etc, in the freedom struggle.

MAJOR IDEAS

People belonging to all castes, creeds and regions took part in freedom struggle

Our freedom is the result of a long and hard struggle waged by the people of India in all parts of our country.

The people of the country have sacrificed their lives and property and have undergone all types of hardships to attain our freedom.

ENVIRONMENTAL STUDIES PART-II (SC)**CLASS III****UNIT: LIVING THINGS***The learner should:*

- | | |
|---|---|
| — classify things in the surroundings into natural and man-made things. | There are variety of things in our environment, some of which are natural and some man-made. Plants, animals, soil, water, rocks, etc. are natural objects. Vehicles, buildings, etc. are man-made. |
| — classify things into living and non-living on the basis of observable characteristics e.g. growth, movement, etc. | There are living and non-living things in the surroundings e.g. plants, animals are living things and rocks, soil, etc. are non-living things. |
| — distinguish animals from plants on the basis of observable characteristics such as growth, movement, reproduction, etc. | Growth and movement are the characteristics of all living things.

Plants and animals differ in many ways. Animals can move from place to place while most plants do not move from one place to another on their own. They also have certain similarities, both plants and animals grow; all plants and animals produce their own kind. |
| — identify and name the parts of a plant. | A plant has different parts e.g. root, stem, leaves, branches, flowers, fruits, etc. |
| — identify and name common plants | The root is a part of the plant that remains under the soil. |
| — take care of the plants in the locality | The stem, branches, leaves, flowers and fruits are parts of the plant that are above the ground. |

COMMON CORE COMPONENTS**NATIONAL IDENTITY**

Names of 5 common plants — Mango, Neem, Jamun, Peepal, Banyan, etc. (The names can change based on local situations) Their characteristic features and uses

PROTECTION OF THE ENVIRONMENT

Plants are natural resources, they need care and protection. Tree plantation and care, harmful effects of indiscriminate cutting of trees. Afforestation programmes in the locality.

- | | |
|---|--|
| — compare plants in the locality on the basis of certain observable characteristics e.g. colour of leaves, colour, smell and size of flower | There are many varieties of plants e.g. some plants have leaves which are not green in colour.

Flowering plants differ in their characteristics such as, colour, size, smell of flowers, types of leaves; branching, etc. |
|---|--|

- name the body parts of common animals in the locality. Each animal has different body structure
 The four footed animals like cow, dog, cat, buffalo, etc have four legs, a head, a neck, and a tail
 Birds like parrot, crow, sparrow, etc. have two legs, two wings, a beak and a head

COMMON CORE COMPONENTS

NATIONAL IDENTITY

National bird of the country — peacock

National animal of the country — tiger Stories about Project Tiger and conservation of wild life.

- compare the body parts of different animals in the locality. There are similarities as well as differences in the body parts of different animals
- compare the body features of animals of the same kind Each animal has its own body features. Animals of the same kind vary in colour and shape. Some animals have certain distinct body features which help one to identify them when they are with other animals of their kind
- identify the food habits of different animals in the locality. The food habits of animals differ. Some animals eat only plants. Some animals eat flesh. Some animals eat grains.
- distinguish between the teeth of animals which eat only plants/grasses and which eat flesh of other animals. The teeth of grass eating and flesh eating animals differ in some ways. The flesh eating animals have teeth which help them to tear flesh. The grass/plant eating animals have sharp front teeth. They have broad strong grinding teeth. Some animals such as the house lizard have no teeth. Birds do not have teeth. They have beaks. The beaks of birds differ depending on their food habits.
- distinguish between the ways in which different animals eat their food. Animals eat their food in different ways.
 Man swallows food after chewing.
 Birds swallow the whole food without chewing.
 Flesh eating animals tear, chew and then swallow their food.
 Plant eating animals, such as, cows and buffaloes chew, swallow their food and then chew the cud.
 Butterflies, mosquitoes, honey bees, etc. live mainly on liquid food. They have special mouth parts which help them suck their food.
- distinguish between animals on the basis of their mode of movement (locomotion) Animals differ in the ways in which they move from place to place.
 All four-footed animals use their legs for walking and running.
 Birds use their wings for flying.
 Fish use their fins for swimming and finding directions.
 Snakes and earthworms crawl on the surface of the earth.

- compare the shelters of different animals in the locality

Different kinds of animals make different kinds of shelters/home
 Many animals such as elephants, monkeys, etc depend on natural shelters
 Birds make nests on trees or at protected places
 Many animals dig holes in the ground to live in
 Some animals live in holes dug by other animals
 some animals such as honey bees and ants build special shelters and live colonies.

UNIT: OUR BODY, FOOD AND HEALTH

- identify and name the different parts of the human body as seen externally

The Human Body, as seen externally, has many parts. head, neck, chest, abdomen, arms and legs are some major body parts, and eyes, ears, nose, tongue and skin are the sense organs.
 An arm consists of fingers, palm, wrist, elbow, forearm and upper arm.
 A leg consists of toes, foot, ankle, knee and thigh
- list the functions of different parts of the body as seen externally

Sense organs are body parts through which various senses are perceived
 Limbs help a person in movement as well as in picking up and carrying things.
 The neck helps a person to move his/her head from left to right, right to left and side ways.
 Important internal organs are housed in the chest and abdomen
- compare the body features of different persons in terms of observable characteristics such as arm length, height, colour of eyes, colour of hair, and generalize that each individual is unique

Individuals vary in terms of their arm length, colour of eyes, colour of hair, height, etc. All human beings have same body parts but each individual has certain distinct body features which make him/her different from others.
- make observations related to senses of sight, smell, hearing, taste and touch

Sense organs help in perceiving different kinds of sensations such as eyes help to see, ears help to hear, nose helps to smell, tongue helps to taste food items and skin helps to feel hot, cold, hard, soft, etc
- classify food stuffs into different groups on the basis of their specific value for health

Food contains different substances each of which has specific value for health. There are different types of foodstuffs. Foodstuffs can be classified into energy giving food, body building food and protective food. Milk is a complete food. Water and roughage are also essential. These help in digestion and bowel movement
- classify foodstuffs according to the form (cooked, and raw) in which they are eaten by human beings

Some foodstuffs are eaten only after they are properly cooked, some are eaten in the raw form and some are eaten in both the raw and cooked forms
- give reasons why some food-stuffs should be eaten raw while others after cooking

Some vegetables and fruits supply more vitamins if eaten in the raw form. Cooking improves the taste and flavour of food and makes it softer and easily digestible.
- state the ways to protect food from contamination by dust and flies

Washing the fruits and vegetables before eating them raw is safe for health
 Keeping cut fruits covered prevents contamination by dust and flies

- see the relationship between the practice of proper toilet habits and maintenance of good health
- Proper toilet habits are essential for good health. Regular bowel movement at least once a day is essential for good health.

COMMON CORE COMPONENTS

PROTECTION OF THE ENVIRONMENT

Defecation in a sanitary latrine or in a pit/trench latrine is a healthy practice. Defecating near a source of drinking water and in open areas in and around the house is harmful. Latrines should be constructed away from the source of water

- practise habits of hygiene by keeping oneself and one's surroundings clean.
- Habits of cleanliness are necessary for health. Desirable hygienic habits/practices include cleaning of body parts regularly with water, taking regular bath, trimming nails, combing the hair, wearing clean clothes, covering the mouth while sneezing and coughing, etc

COMMON CORE COMPONENTS

PROTECTION OF THE ENVIRONMENT

The home and its surroundings should be kept clean. Spitting, urinating and defecating in the open is harmful for health

- state the functions of the teeth.
- Teeth perform three important functions. chewing food, give a good appearance to the face and making speech clear. During a normal lifetime one has two sets of teeth — milk teeth and permanent teeth.
- identify the causes of tooth decay.
- Teeth decay and get weak if they are not cleaned and exercised properly. Tooth decay causes foul smell, toothache and diseases such as indigestion, acidity, etc
- identify the steps to be taken to prevent tooth decay and practise habits of dental hygiene
- Tooth decay can be prevented by taking proper care of the teeth e.g. washing and cleaning with safe water after eating food, brushing regularly in the morning and before going to bed
- Massaging gums with clean finger and eating raw fibrous fruits and vegetables is good for keeping the teeth healthy

UNIT: MATERIALS AND THEIR PROPERTIES

- classify materials in the immediate environment according to certain observable characteristics such as colour, texture, shine, etc
- A large variety of materials are available in the environment. Materials have different properties. Objects made up of same kind of materials differ in terms of colour, texture, shine, etc.
- classify materials into solids, liquids and gases.
- Materials exist in three forms — solids, liquids and gases
- generalize the common properties of all materials
- There are certain properties common to all materials, e.g. all solids, liquids and gases occupy space. Solids, liquids and gases have some specific properties e.g. solids have definite shape, liquids and gases don't have any shape

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| <ul style="list-style-type: none"> — generalise that the three states of matter are interchangeable | <p>The three states of matter are interchangeable e.g. ice changes into water and water into steam when sufficiently heated.</p> |
| <ul style="list-style-type: none"> — see relationship between the three states of matter and their uses. | <p>Many uses of the materials are based on the states of these materials. Uses of solids, liquids and gases</p> |
| <ul style="list-style-type: none"> — infer that water dissolves many substances to form solutions. | <p>Water dissolves many solid substances to form solutions.</p> |
| <ul style="list-style-type: none"> — infer that a certain quantity of water at a constant temperature can dissolve only a limited quantity of a substance | <p>Certain quantity of water at constant temperature can dissolve only a limited quantity of a substance</p> |
| <ul style="list-style-type: none"> — infer that the quantity of different substances which can be dissolved in a given quantity of water at a constant temperature, varies | <p>The quantity of different solid substances which dissolve in a given quantity of water at a particular temperature varies</p> |
| <ul style="list-style-type: none"> — perform an experiment to show that a given quantity of hot water generally dissolves a greater amount of a substance than the same quantity of cold water. | <p>A given quantity of hot water dissolves a greater amount of solid substances like sugar or common salt than the same quantity of cold water</p> |
| <ul style="list-style-type: none"> — state the conditions which facilitate rapid dissolving of a substance in water. | <p>Heating of water helps in dissolving a solid substance in water quicker.</p> |
| <ul style="list-style-type: none"> — perform an experiment to find out the effect of heating, crushing and stirring on the time taken for dissolving a substance in water | <p>Crushing of the solid substance into powder form and stirring it helps in dissolving the substance faster</p> |
| <ul style="list-style-type: none"> — identify other liquids which dissolve certain substances. | <p>Liquids other than water also dissolve certain substances e.g. grease, wax and coal tar dissolve in kerosene.</p> |
| <ul style="list-style-type: none"> — cite examples where a liquid could be used for separating two solid substances | <p>A liquid can be used to separate one substance from another, e.g. water can be used to separate sand from a mixture of sand and sugar, kerosene can be used to remove oil on a cloth</p> |

UNIT WEATHER AND SEASONS

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| <ul style="list-style-type: none"> — distinguish between different types of weather | <p>There are different types of weather — sunny, cloudy, rainy or dry, windy or calm</p> |
| <ul style="list-style-type: none"> — see relationship between the changes in weather and the phenomenon of the water cycle | <p>The water cycle affects the weather.</p> <p>Evaporation and condensation of water vapours lead to the formation of clouds and rain. The heat of the sun and wind facilitate evaporation.</p> |
| <ul style="list-style-type: none"> — prepare a weather chart and record weather changes that take place during a given period of time. | <p>Weather often changes. Weather may change during the day or night, from day to day or from week to week.</p> <p>The weather can be forecast.</p> |
| <ul style="list-style-type: none"> — identify the effects of changes in weather on his/her day to day life | <p>Weather influences one's life in many ways e.g. travel is risky in stormy and foggy weather, outdoor work is difficult during rainy weather.</p> |
| <ul style="list-style-type: none"> — distinguish between the weather conditions during different seasons. | <p>There are mainly three seasons. Summer, monsoon and winter</p> |

CLASS IV

UNIT. LIVING THINGS

- identify and list the ways in which human beings use plants and plant products

Plants are useful to human beings in many ways.

Some plants produce edible items such as cereals, vegetables, fruits, nuts, pulses, etc

Some plants are used as fodder for animals

Some plants are sources of medicines, (e.g. 'tulsi', 'neem') fibre (e.g. cotton, jute, etc) The dead and decayed parts of plants are used as manure

COMMON CORE COMPONENTS

NATIONAL IDENTITY

Some plants are sources of medicines, e.g. Tulsi, Neem, Mint, Datura, Vasaka, Chir, Bel, etc, medicinal uses of these plants.

PROTECTION OF THE ENVIRONMENT

Plants are important natural resources They need care and protection Care of plants at home and in the school Information about afforestation programme

- identify and list the ways in which animals and animal products are used by human beings.

Animals are useful to human beings in many ways Some animals are used in the farming, some give us milk, some animals give us wool The skin of some animals is used to make leather. The dung of some animals is used as manure and also for producing Gobar gas.

COMMON CORE COMPONENTS

PROTECTION OF THE ENVIRONMENT

Safe disposal and proper use of animal wastes Care and protection of domestic animals and pets.

- identify the ways in which plants and animals are cared for and protected.

Plants and animals need care and protection Plants need timely watering and manuring

Plants have to be protected from extreme heat, cold and continuous shade

Trampling over plants is harmful to their growth. Plants need protection against pests and diseases. Animals need protection against diseases

Domestic animals need shelter, clean drinking water and proper grooming to keep them healthy.

- Indiscriminate cutting of plants and killing of animals are harmful to the environment.
- cite examples of steps taken for protection of plants and animals in the country.
 - Campaigns for protection of plants and animals
 - Stories related to protection of plants Chipko Movement, Van Mahostavas, etc.
 - name important wild life sanctuaries and locate them on the map of India
 - Afforestation programmes in the locality. Conservation of forest and forest wealth. National parks and wild life sanctuaries
 - identify and state the functions of different parts of a plant.
 - Different parts of a plant have different functions
 - The roots hold the plant firmly to the soil. The plant gets its water and minerals from the soil through the roots. The stem bears other parts of the plant. It transports water and minerals from the roots to the other parts of the plant.
 - The green leaves prepare food for the plant.
 - The flowers of some plants produce fruits and seeds. New plants grow when seeds germinate
 - recognise that dispersal of seeds is necessary for the growth of new plants
 - When too many seedlings grow at one place, only a few of them survive
 - When seedlings grow close together they do not get enough sunlight, water and minerals.
 - Dispersal of seeds from the mother plants helps in the growth of new plants away from the mother plant.
 - list the different ways by which seeds are dispersed
 - Seeds are dispersed in different ways, e.g some seeds are dispersed by wind, some by water and some by animals
 - see relationship between characteristic structure of seeds and modes of their dispersal
 - Certain characteristic structures of the seeds determine the mode of their dispersal.

UNIT. HUMAN BODY, NUTRITION AND HEALTH

- see the relationship between proper functioning of different organs of the human body and smooth functioning of the body as a whole.
 - The human body works as a single unit though different organs of the body perform different functions
- state the functions of the heart, lungs, kidney, stomach and intestines.
 - Functions of different organs involved in processes such as breathing, digestion of food and circulation of blood, e.g. functions of the heart, lungs, kidney, stomach, etc
- see the relationship between consumption of food-stuffs belonging to different food groups and maintenance of proper health.
 - For maintaining proper health, diet should include an adequate quantity of food belonging to different major food groups.

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| | For adequate nourishment, daily diet should contain food having nutrients for body building, giving energy and protecting body against diseases |
| | Fermented food such as curd, sprouted grains and seeds are rich in food value |
| — state the ways in which the food is digested and made use of by the human body. | The food that is eaten is changed into a soluble form which can be absorbed and used by the body for providing energy |
| | Process of digestion and absorption of food in the body |
| — see the relationship between the methods adopted for storing, cooking and serving of food and wastage of food and its nutrients. | Care should be taken not to waste food and food nutrients while storing, cooking and serving |
| | Practices like overcooking, improper serving, spilling, improper storage of foodstuffs, lead to wastage of food and loss of nutrients. Avoid spoilage and wastage of food |
| | Certain vitamins and minerals get dissolved in water used for cooking thus causing loss of nutrients |
| — state the effects of eating contaminated food items | Eating contaminated and spoiled food causes diseases. Flies and dust contaminate the food |
| — list the ways in which food items can be protected against contamination. | Hygienic handling and serving prevents food from getting contaminated |
| | Storing food at low temperature helps to preserve it for a longer time. |
| — see relationship between drinking contaminated, polluted water and occurrence of certain diseases. | Safe drinking water is essential for good health |
| | Drinking polluted water causes diseases such as cholera, typhoid, gastroenteritis, etc |

COMMON CORE COMPONENTS

PROTECTION OF THE ENVIRONMENT

Water gets polluted in many ways such as sewage, dumping of industrial and animal wastes into water, washing of clothes, cleaning of utensils, etc. in or near the source of water.

Pollution of water can be prevented in a number of ways such as protecting the source of water, using bleaching powder in wells, avoiding defecation near the sources, etc

Water can be purified by boiling, filtration, adding chemicals, etc.

Safe handling and storing of drinking water and its proper use

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| — see the relationship between the occurrence of certain diseases and unhygienic surroundings | <p>Insanitary conditions in the surroundings cause breeding of flies and mosquitoes which carry disease causing germs</p> <p>Cleanliness of the surroundings helps in preventing many diseases</p> <p>Sanitation in and around the house, school and neighbourhood prevents breeding of flies and mosquitoes</p> |
| — practise safe handling of drinking water in home, school and community | Drinking water facilities and toilet facilities in home need proper handling and care |
| — keep the toilets clean in home, school and community | |

UNIT MATERIALS AND THEIR PROPERTIES

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| — distinguish between the properties of different solid substances | All materials are characterised by certain specific properties |
| — generalise that all matter is made up of small particles | All matter is made up of small particles (only examples of solids to be introduced) |

COMMON CORE COMPONENTS

INDIA'S COMMON CULTURAL HERITAGE

Story about the contribution of Rishi Kanad to the understanding of the particulate nature of matter

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| — see the relationship between the particulate nature of matter and dissolving of materials in a solvent like water. | <p>When a solid material dissolves in water, it breaks up into tiny particles</p> <p>In a solution, the particles of the solute spread throughout the liquid. Solutions tend to be uniform</p> |
| — demonstrate the ways in which insoluble and soluble substances can be separated from a liquid | <p>Insoluble solids can be separated from liquids by different methods like sedimentation, decantation and filtration</p> <p>From a solution dissolved solid(s) can be separated in the form of crystals</p> |

UNIT AIR, WATER AND WEATHER

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| — generalise the effects of the sun on weather conditions. | The sun plays an important role in causing changes in weather |
| — identify the role of the sun in providing light and warmth during the day. | The sun warms the earth during daytime |
| — identify the reason for having more warmth in summer than in winter | The sun warms the earth more in summer than in winter because there are more hours of sunshine in summer |

- than in winter and the sun is more directly overhead in summer than in winter
- distinguish between evaporation and condensation of water

When water evaporates it goes into the air as water vapour and when it is cooled it becomes water again
- state the meaning of evaporation and condensation

Change of water into water vapour is called evaporation

The conversion of water vapour into water is called condensation
- generalise the factors which effect the rate of evaporation of water

The rate of evaporation of water is effected by several factors

Water evaporates faster when it is windy

Water usually evaporates faster when the temperature is high

Water evaporates faster when the exposed surface is large

Water evaporates faster when the air is dry
- generalise the effect of cooling of water vapour and the role of condensation of water in causing changes in the weather

Sufficient cooling changes water vapour into droplets of water

Further cooling changes water droplets into crystals
- identify the ways in which the water vapour in the atmosphere may condense in different forms

Water vapour in the atmosphere may condense in different ways

When water vapour condenses on cold objects, dew is formed

When objects are freezing cold, frost may be formed from water vapour

When water vapour condenses on particles in the air, clouds or fog are formed

Rain is formed when drops of water in the clouds are too heavy to stay in the air

When water vapour freezes in the air, it forms minute ice crystals and falls in the form of snow

Sleet and hail may be formed when raindrops fall through very cold air
- identify the effects of certain weather conditions on the life of the people and on crops

Changes in weather conditions affect the life of people, plants and animals. Heavy rain especially during the harvest season can damage standing crops

Frost may also damage standing crops. Some animals hibernate (sleeping through) during winter.

COMMON CORE COMPONENTS

PROTECTION OF THE ENVIRONMENT

Harnessing alternate sources of energy such as solar energy, wind, water, etc. Avoiding wastage of different forms of energy such as heat, electricity, etc.

UNIT THE EARTH AND THE SKY

- state that a body that revolves around the sun is called a planet A planet is a body that revolves around the sun. The earth is one of the nine planets of the solar system. Each planet has a specific orbit.
- list the names of nine planets
- See relationship between the rotation of the earth and occurrence of day and night The earth rotates causing night and day.
The earth completes one rotation in 24 hours.
The side of the earth facing the sun is lighted, the other side is dark.
The sun rises in the East and sets in the West because the earth rotates from West to East.
- see relationship between the revolution of the earth around the sun and the changes in seasons Seasons are caused by the revolution of the earth around the sun.
The sun is more directly overhead in summer. During this period, the rays of the sun are more intense. In winter, the sunlight does not fall perpendicular to the surface of the earth.
- define a satellite and distinguish between a planet and a satellite A satellite is a body that revolves around a planet.
- distinguish between natural and artificial satellite The moon is a natural satellite of the earth, other planets also have satellites.
There are many artificial satellites orbiting around the earth.

COMMON CORE COMPONENTS

INDIA'S COMMON CULTURAL HERITAGE

India has launched artificial satellites e.g. Aryabhata, Rohini, INSAT, etc.

Stories related to the contributions of Aryabhata, Bhaskara and other scientists of ancient India in the field of astronomy.

CLASS V

UNIT LIVING THINGS

- distinguish between living and non-living things on the basis of certain observable characteristics such as growth, locomotion, response to stimuli, reproduction
Living things exhibit certain characteristic features such as growth, locomotion, respiration, response to stimuli and reproduction.
- distinguish between plants and animals on the basis of observable characteristics.
Both plants and animals share many common characteristics but they also differ in some other ways such as growth pattern, movement (locomotion), response to stimuli, reproduction, etc
- identify the special characteristics (body features) which help plants and animals to adapt themselves to their environment
Plants and animals have special characteristic features which help them to adapt themselves to the environment.
- draw inference about the kind of environment in which an animal lives by observing its features and habits (body structure, food, etc)
Plants and animals that live in water have special features. Plants and animals that live on land or mountains or deserts also have special features
- infer that sudden environmental changes have adverse effects on animals and plants
Animals and plants adapted to one kind of environment cannot survive easily in a different type of environment

Environmental pollution has harmful effects on the life of the animals and plants.

Plants and animals depend on each other and also interact with their environment.
- state the conditions necessary for the germination of seeds
Seeds require proper moisture, temperature and air for germination
- design experiments to find out the conditions necessary for the germination of seeds
Young seedlings need warmth, air, moisture, sunlight and minerals for proper growth
- see the relationship between the growth of young seedlings and factors affecting growth.
- infer that there are individual differences in the growth of seedlings even when the conditions for germination are the same
Even under identical conditions the growth of individual seedlings varies

UNIT. HUMAN BODY, NUTRITION AND HEALTH

- state that the human body contains many bones and muscles.
The human body has many large and small bones. Bones have different functions such as giving shape to the body, protecting internal organs and facilitating movement, etc
- state that bones and muscles help in body movement
Muscles make the parts of the body move by contraction and relaxation

Physical exercises and correct posture are essential for proper development of muscles

— state that inadequate diet causes deficiency diseases	Intake of inadequate and unbalanced diet leads to deficiency diseases. Deficiency diseases such as kwashiorkor, night blindness, anaemia, etc., their causes and symptoms
— identify the measures to prevent deficiency diseases	Deficiency diseases can be prevented by taking a proper balanced diet
— list the common food practices and beliefs in the community	There are different food practices and beliefs in the community Some traditional food practices like eating fermented rice, sprouted grains, 'sattu', etc. are good for health
— see relationship between positive food beliefs and practices and maintenance of good health	Some traditional food beliefs and practices are harmful The positive beliefs should be encouraged and the negative ones should be discouraged
— list the factors that contribute to the spread of communicable diseases and the measures to be taken for preventing them	Communicable diseases are caused by germs and these germs spread in many ways such as contamination through food, water, air. These may also spread through insect bites and through direct contact
— take steps to get himself/herself vaccinated/inoculated	Communicable diseases can be prevented by isolating the diseased person from others, keeping the home and its surroundings clean, developing immunity and resistance against diseases by vaccination and inoculation.
— inform the health authorities of any case of communicable diseases	
— participate in the activities for controlling the spread of communicable diseases	There are several schemes of the Government to control the spread of communicable diseases. One of them is the National Health and Welfare Programme

COMMON CORE COMPONENTS

PROTECTION OF THE ENVIRONMENT

Environmental sanitation is essential for the health of the community.

There are various types of waste materials generated in the neighbourhood (human excreta, animal and vegetable wastes, household wastes, etc.)

Collection and proper disposal of waste materials are essential for keeping the environment clean

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| — identify the ways of collection and disposal of garbage and take steps to dispose of garbage in the proper way | Burning, dumping, etc. are some ways to dispose of the waste materials

All of us are responsible for keeping the environment clean. |
| — identify the ways in which some waste materials are recycled and reused | Some of the waste materials like bottles, tins, newspapers etc. can be reused |

Animal and vegetable wastes can be converted into energy source (biogas, gobar gas)

UNIT SOIL EROSION AND CONSERVATION

- identify the different factors that contribute to soil erosion
 - Soil is a natural resource
 - Soil needs our utmost care for maximum utility
 - Soil is washed away by wind and running water (soil erosion) Deforestation also leads to soil erosion.
- narrate harmful effects of soil erosion
 - Soil erosion reduces the fertility and productivity of the soil
- state the ways in which the soil is conserved.
 - Soil is conserved by controlling the eroding agents
 - Planting trees, grass, building bandhs and terracing slopes help to conserve soil.
- take part in tree planting activities
 - Soil erosion can be prevented by reducing the speed of the water which runs through the soil.
- list different ways in which soil can be made fertile and productive
 - Fertility and productivity of soil are enhanced by the use of scientific methods of agricultural practices such as modern implements, improved variety of seeds, crop rotation, intercropping, etc

UNIT AIR AND ITS USEFULNESS

- state the properties of air and uses of air in daily life situations
 - Air exerts pressure.
 - Air is used to inflate things
 - Air can be blown into balloons
 - Air can be pumped into the bladder of a football or a cycle tube
 - Air pressure can move liquids
- state the names of the gases present in the air and identify their uses
 - Air contains many gases useful to man
 - Gases such as oxygen, nitrogen, carbon-dioxide are present in the air. All these gases are useful to us. Air also contains water vapour. The amount of water vapour in the air is an important factor for affecting changes in weather conditions

COMMON CORE COMPONENTS

PROTECTION OF THE ENVIRONMENT

Air gets polluted in different ways

Air is polluted by smoke, gases given out by automobiles, dust particles, crowding etc.

Polluted air is harmful to human life.

Fresh air is very essential for keeping good health. Care should be taken to minimise air pollution. Air pollution can be prevented in many ways.

Doors and windows help in facilitating the movement of fresh air inside the house.

UNIT: FORCE, WORK AND ENERGY

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| — state that there are different ways in which force is exerted on a body | Force is exerted in many ways (push, pull, gravity, electrical force and friction). |
| — define work as movement of a body through a distance when force is applied to it. | Work is done when a force is applied on a body and the body moves through a distance. |
| — identify the different types of simple machines used in daily life to do work | Lever, pulleys, inclined planes are different types of simple machines. Screws, wedge, wheel-barrow, scissors, etc. are examples of simple machines. |
| — state that energy is needed to apply force | There are different sources of energy such as coal, oil, electricity, etc. |
| — list the different sources of energy. | The sun is the ultimate source of energy. |
| — identify the reasons for conserving energy and take steps to prevent wastage of energy. | Energy is the capacity to do work.
Energy is required for all kinds of work.
Sources of energy are limited.
It is essential to conserve energy. Alternate sources of energy. |

UNIT: THE EARTH AND THE SKY

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| — distinguish between transparent, translucent and opaque objects | Some objects allow light to pass through them (transparent objects).
Some objects allow light to pass through them only partially (These objects are called translucent objects). |
| — generalise the factors that contribute to the formation of shadows | Shadows are formed when light is obstructed by objects which do not allow light to pass through them.
Shadow formation depends upon the nature of the ob- |

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| | ject, size of the object and the source of light and the distance between object and the source of light |
| — identify the ways in which time can be ascertained by observing the shadow of an object cast by the sun | Time can be told by observing the shadow of an object cast by the sun (Sun clock and Jantar Mantar) |
| — see relationship between shadow formation and occurrence of eclipses | Solar and lunar eclipses can be explained on the basis of shadow formation |
| — identify the causes of solar lunar eclipses | Solar eclipse occurs when earth is in the shadow of the moon |
| | Lunar eclipse occurs when shadow of earth falls on the moon. |
| | Solar and lunar eclipses occur on the no-moon and full moon day respectively. |
| | Occurrence of eclipses can be predicted scientifically. Eclipses are not supernatural phenomena |

COMMON CORE COMPONENTS

INDIA'S COMMON CULTURAL HERITAGE

Simple stories about the contributions of ancient Indian astronomers in developing solar and lunar almanac, prediction of eclipses, prediction of time and position of stars and constellations

UNIT: ACCIDENTS CAN BE PREVENTED

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| — identify different situations which may lead to accidents at home and outside | Carelessness can lead to accidents. Accident may cause permanent disability. |
| — list the ways in which accidents can be prevented | To prevent accident, handle carefully the equipments used in day to day life. Play games safely. Careful handling of equipments use in day to day work can prevent accidents |
| — follow the traffic rules and avoid situations which can cause road accidents | Road safety rules. Measures to prevent road accidents |
| — identify situations actions which can cause accidental fire | Burning stove, careless handling of match box, and cooking gas can cause fire. |
| — list the steps to follow in case of fire. | In case of fire take steps such as putting-off electric switch, raising alarm etc |
| — take measures like simple first aid in case of cut, burns and other injuries. | Burns, cuts, wounds, etc. need proper care. Washing wounds with antiseptic solution prevents infection. Serious wounds, burns etc. should be treated by doctor. |

UNIT MAN, SCIENCE AND ENVIRONMENT

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| — state that millions of years ago man lived in harmony with nature | In early stages of human civilization man lived in harmony with nature |
| — identify the causes that lead to the over exploitation of nature and natural resources | With progress of civilization man assumed a dominant role and started exploiting nature and natural resources, to fulfill his demands for food, clothing shelter etc |
| | This over exploitation has depleted nature and natural resources and disturbed the balance of nature |
| — list the effects of the over exploitation of natural resources | Many species of plants and bodies, air and land animals are extinct today |
| — infer that unless steps are taken to check these, the natural resources will be exhausted, our earth will not be a place worth habitation | Natural resources are limited Some these are not renewable and hence need judicious use |
| — take steps to avoid wastage of natural resources such as plants, animals, soil, air, water, minerals, etc. | Natural resources need to be conserved Indiscriminate killing of animals, felling of trees, indiscriminate use of pesticides, industrial pollution, extensive land use etc, need to be avoided to make the world a better place to live |

— S. Bhattacharya
— K. Ramachandran

CHAPTER 6

MINIMUM LEARNING OUTCOMES AND CONTENT FOR TEACHING WORK EXPERIENCE

Introduction

Work Experience has been accorded a significant place at all stages of school education. The need for proper and effective implementation of the programme of Work Experience has been emphasized in the NPE 1986. Referring to the objectives and processes of Work Experience 'National Curriculum for Elementary and Secondary Education — A Framework' (1988) states — 'Work Experience, viewed as purposive and meaningful work, organised as an integral part of the learning process and resulting in either goods or services useful to the community is considered an essential component at all stages of education, to be provided through well-structured and graded programmes.'

At the primary stages, the objectives of Work Experience are very close to those of general education. At this stage the children love to participate in various activities at home and school. This natural tendency among children has been kept in mind while developing the curriculum in Work Experience. As indicated in the objectives of Work Experience in Chapter 2, the curriculum in Work Experience should help develop desirable healthy living practices, environmental sanitation and beautification, awareness about the world of work and desirable attitudes, values and habits of work. Efforts have been made to select relevant content and suggest suitable activities to help the children attain the Minimum Learning Outcomes (MLOs) identified in the area of Work Experience. The learning experiences may be so designed as to enable the child to progress in a systematic way to attain 'mastery' level in respect of selected Minimum Learning Outcomes (MLOs).

Entry Level Attainment in Work Experience

Researches in the area of Pre-School Education in India reveal that by the age of six, the child has developed visual and motor coordination. By this time, the child also acquires the skills of making a hole, beating a drum or any other hard object, fixing a nail with a small hammer, smoothening the surface of an object etc. He/she is in a position to use beads, paste paper, tie two parts of a thing/an object. Besides, he/she is aware of some of the rules followed in day-to-day life for keeping the body, belongings and surroundings clean. There is a natural

curiosity in him/her to explore his/her immediate environment and things/objects therein. He/she wants to get a first-hand experience of things in and around him/her. He/she feels an urge to touch and handle things/objects, tools and simple machines. He/she is also acquainted with objects of various shapes and sizes and is interested to know about the 'why' and 'how' of objects. At times, he/she imitates others. Sometimes he/she is found improvising tools and make an instrument/a toy by self-efforts. He/she starts reasoning about day-to-day events/situations and tries to find out their relevance to one's life.

Socially, he/she tries to identify behaviours/actions that make one acceptable to others. There is, thus, a desire in him/her to acquire social skills like playing and working with the peer group, sharing things and materials with others, etc. He/she gradually starts becoming sensitive to others' needs and requirements. In this process many a social skills and mannerisms are picked up by him/her.

Content and Teaching-Learning Activities

While selecting the content, the entry behaviour of the children, the needs of developing healthful living habits, creating awareness about the world of work, helping in development of neuro-muscular control and coordination, basic motor skills, desirable social behaviours and attitudes, etc. have been used as the basis. Hence the content covers the areas of cleanliness and sanitation, desirable food habits (nutrition), service agencies, occupations of people, tools used in different occupations, scientific principles and processes in production of various goods/products etc.

Alongwith the general content, efforts have also been made to identify content related to the common core components as and where possible.

The content of Work Experience provides scope for a variety of teaching learning activities. The variation in local situations will need different types of activities. But by and large the activities may relate to health and hygiene, sanitation and beautification of surroundings; recreation (cultural), community service, visits to various service centres and places related to various occupations, handling of tools and production of some simple goods.

The following criteria may be of help in selecting the appropriate activities

- the competencies attained by the child at entry level;
- the background and environmental situations of child,
- the availability of material, human resources within and outside the school,
- the potentialities of the activity in providing opportunities to the child for participation in self-expressional creative activities;
- the richness of the activity in bringing the child closer to the cultural heritage of the country and a sense of pride for its rich natural resources;
- the potentialities of the activity to offer opportunities to the child to render services to people at home, school and in the community

In the organisation of content, thematic approach is to be adopted. The themes are to be drawn from various areas of learning, e.g., visit to work situations in the locality, maintenance of cleanliness of the place of work, better health and work efficiency, organisation of festivals in the school. While some of the activities may continue from class I to V a few may be taken up in classes III onwards. The depth of the content/activity may increase from one class to the next one.

Evaluation

As indicated in Fig. 1, Chapter 2, the attainment of the

CLASSES I & II

Minimum Learning Outcomes

The learner should.

- identify various work situations in the locality
- collect information about the tools and materials used in various work situations.

Expected Behavioural outcomes (EBOs), under, psycho-motor domain objectives, the evaluation must be continuous and comprehensive. By and large, the teacher will have to depend on observation technique. Other technique, such as check-lists, opinionnaires, oral/written tests etc. may also be resorted to from time to time. Great care needs to be taken for keeping an objective and detailed record of each child's progress.

Time Allocation

The time allotted for this area is 20% of the total school duration which comes to about a period of 40 minutes a day. Although integrated approach may be adopted in the organisation of Work Experience activities, flexibility may be maintained with regard to the duration of the Work Experience period. In a week seven separate periods may be allotted to this area, however, at times children may continue with the work for two consecutive periods (e.g., when it is a visit programme, or the children are preparing some models/preparing for festival activities). Thus, no rigid or fixed pattern may be followed in teaching this subject. At times, activities under Art Education and Health and Physical Education may be clubbed together for maximising utility of the time available.

Content

Work situations related to different occupations in the locality such as those of a potter, carpenter, bamboo worker, blacksmith, cobbler, weaver, tailor, etc., (or any other place of work)

Tools, materials, techniques used for performing tasks related to different occupations in the locality. Objects prepared, their use(s) in daily life.

COMMON CORE COMPONENTS

REMOVAL OF SOCIAL BARRIERS

Services rendered by people in various occupations through production of objects of daily use. Contributions of each occupation are equally important for us.

- | | |
|---|---|
| <ul style="list-style-type: none"> — identify various service centres in the community — recognise that both men and women provide service in our daily life situations | <p>Health centre, Railway Station Bus Stop Post Office, Ferry Ghat, etc in the locality, their functions, and services rendered.</p> <p>Health centre</p> |
|---|---|

COMMON CORE COMPONENTS

EQUALITY OF SEXES

Both men and women are employed in service centres and render services to the members of the community.

- | | |
|--|---|
| <ul style="list-style-type: none"> — identify the locality available materials used in preparing objects of daily use | <p>Materials such as leaves, bamboo, wood, stone, cardboard, paper, cloth, etc. Sources of these materials, Waste materials such as cork, bamboo strip, used containers, calenders, etc. and their uses</p> |
|--|---|

COMMON CORE COMPONENTS

PROTECTION OF THE ENVIRONMENT

Environment is a rich source of materials. Need for protection of the environment (trees, leaves, flowers) from the animals, insects, and from misuse by human beings.

- | | |
|--|--|
| <ul style="list-style-type: none"> — identify the scientific principles and processes underlying various steps of various tasks | <p>Steps/processes involved in various work situations such as cutting, folding, pasting, tying, bending etc</p> |
|--|--|

COMMON CORE COMPONENTS

INCULCATION OF THE SCIENTIFIC TEMPER

Scientific steps/processes, postures involved in handling of tools in various tasks related to different occupations.

- | | |
|---|--|
| <ul style="list-style-type: none"> — use simple tools related to various activities such as gardening, cleaning, preparing decorative articles | <p>Gardening tools such as khurpi, watering can, water pipe, pruner and their uses.</p> <p>Cleanliness tools such as broom, duster, water can, basket, waste paper box, soap etc and their uses. Tools for self-experessional, creative activities such as knife, pair of small scissors, needle, paste, pin, thread etc. and their uses</p> |
| <ul style="list-style-type: none"> — prepare beautiful and useful objects | <p>Materials needed for preparing decorative items such as clay, leaves, beads, paper, waste materials; sources for procuring these, Steps involved and tools required to</p> |

- exhibit good work habits e.g. punctuality, regularity, cooperation, cleanliness etc
 - recognise the need for following systematic order in performing tasks
 - practice hygienic principles with regard to body, belongings and keep the work place neat and tidy
- make artistic, useful objects such as garlands, paper chains, clay toys, wall hangers, etc. Ways to display these for decoration at home/school Ways to keep the work place tidy, seats and tools properly arranged.
- Need for cleaning the place after completion of work, cleaning waste paper box, storing materials, tools and products at specified place, washing hands, feet etc

COMMON CORE COMPONENTS

PROTECTION OF THE ENVIRONMENT

Causes of the pollution of environment and ways to keep it free of pollution.

- participate enthusiastically in celebrating National days, national and local festivals
 - list the ways in which these festivals are celebrated in home/school/neighbourhood
 - sing the National Anthem in proper tune (in a group and individually)
 - draw sketches of National Flag, Emblem in the National Flag
- National Festivals—Independence Day, Republic Day, Gandhi Jayanti Local Festivals—Raksha Bandhan Lohri, Bihu, Chhat, Saraswati Puja etc.
- Reasons for celebrating these festivals and ways of celebrating them

COMMON CORE COMPONENTS

HISTORY OF INDIA'S FREEDOM MOVEMENT

Biographical sketches of four freedom fighters—Mahatma Gandhi, Jawahar Lal Nehru, Subhas Chandra Bose, Sarojini Naidu

NATIONAL IDENTITY

Significance of National Festivals

Emblem in National Flag—its significance

Significance and singing of National Anthem, and other patriotic songs.

- identify the activities in which he/she can contribute at home and schools
 - participate in various activities at home/school
 - help in keeping the home/school clean.
- Need for keeping the house and school clean Role of each member of the family in looking after the cleanliness of the home, cooking and serving food, taking care of the pets/domestic animals, plants etc.

- share toys/tools with other members of the family and peers in schools. Role of each member in keeping the school clean and beautiful.

COMMON CORE COMPONENTS

EQUALITY OF SEXES

All members (men/women, boys/girls) in the family or in the school have equal importance and responsibilities

CLASS III

- identify work situations in the locality Work situations related to different occupations such as those of a potter, blacksmith, carpenter, weaver, farmer, fisherman, bamboo worker, milkman, tailor, etc. (or any other place of work)
- collect information about the tools and raw materials required in various work situations. Tools, materials, techniques used in performing tasks related to different occupation in the locality Goods produced through different occupations and their uses in daily life.
- identify the sources of the raw materials.
- identify the steps involved in the production of finished materials resulting from various occupations

COMMON CORE COMPONENTS

REMOVAL OF SOCIAL BARRIERS

Significance of services rendered by people in various occupations

Inter-dependence of members of community involved in different occupations.

- identify various service centres in the community Service centres such as Health Centre, Hospital, Block Development Office, Post Office, Dairy Farm, Animal Husbandry, Krishi Kendra, Cycle Repair Shop, Ferry Ghat, etc in the locality-functions and services rendered by these centres to common man in the community.

COMMON CORE COMPONENTS

EQUALITY OF SEXES

Both men and women, serve the community equally in terms of sacrifices made, devotion, working hours, etc.

- recognise the need for protecting the environment and natural resources Sources of materials such as bamboo, wood, stone, cardboard paper, food items, etc

- identify the waste materials and various ways in which these can be used. Waste materials, their uses in different work situations

COMMON CORE COMPONENTS

PROTECTION OF THE ENVIRONMENT

Need to protect the natural resources in the environment such as trees, plants, leaves, water resources, etc. Animals and birds are friends of man. They need protection and looking after.

- identify the scientific principles and processes underlying various work processes Steps involved in various work situations such as cutting, folding, bending, fixing joints, repairing, mending, stitching etc

COMMON CORE COMPONENTS

INCULCATION OF SCIENTIFIC TEMPER

Every task involves scientific processes such as body posture, holding and handling the tools(s), precautions/safety measures to be taken, etc

- use simple tools carefully Tools used in gardening such as khurpi, watering can, pipe, pruner, hand hoe, for cleaning work-place such as broom, duster, basket, waste paper can, etc
Tools required for creative activities such as knife, scissors, blade, needle nail, board pin, small hammer, etc
Precautions to be taken while using the tools
- take proper care of the various tools and store them in the right place Safe ways to store these tools
- prepare artistic and useful objects for beautifying home/school, Materials required for preparing decorative objects for home and school. Sources of these materials and the tools used
- exhibit good work habits such as cooperation, punctuality, orderliness etc Types of decorative and artistic materials used on various occasions at home and school
- practise hygienic principles and keep the place of work neat and tidy Uses of keeping the place of work neat and in order and ways to do so
- appreciate the effects of good sanitary conditions in and around places of work Effects of insanitary conditions in and around work places

COMMON CORE COMPONENTS

PROTECTION OF THE ENVIRONMENT

Keeping the environment of work place clean results in keeping the workers in good health and production of better materials

- | | |
|--|---|
| — participate enthusiastically in celebration of festivals. | Local festivals-their significance Significance of National Days, mode of their celebration, such as preparations made, organisation of functions etc |
| — help siblings and parents in performing various activities at home | |
| — help the needy such as the sick, physically handicapped and the old. | Need and importance of keeping home, school and neighbourhood clean and beautiful |
| — participate in activities such as cleanliness, beautification, looking after needy in school | Diseases caused due to insanitary conditions Care of the sick Care of plants, animals |

COMMON CORE COMPONENTS

EQUALITY OF SEXES

Both the parents, brothers, sisters contribute equally for the welfare of the family.

OBSERVANCE OF THE SMALL FAMILY NORM

Small family ensures better care and attention to each member

CLASS IV

- | | |
|--|--|
| — identify various work situations where people in the local community are engaged. | Work situation related to different occupations such as agriculture, dairy farming, carpentry, stone crushing, brickmaking, employment in various industries, any other service centres such as nutrition and health centre, block development office, hospital, post office, bank etc in the locality Functions of these workers and services rendered to local community Tools, materials and techniques used in performing various tasks related to various occupations Significance and use of articles produced by the artisans |
| - appreciate the contributions of artisans engaged in various occupations | |
| --- identify the raw materials, available in the local environment which are used in different types of occupations | Raw materials available in the locality-leaves, wood, bamboo, metal, lime stone, etc |
| - name the raw material used in various crafts in the locality | Use of raw materials in various crafts such as in making utensils, artistic/decorative articles |
| — identify the areas in the country where special type of raw materials are found and the specific uses of these materials | Areas/Places in the country where special types of raw materials are available/found and the articles/products in which these materials are used |
| --- recognise the scientific principles and processes underlying various work situations | General steps involved in various work situations/occupations such as collection and selection of materials, (ii) processing the materials, (iii) selection of appropriate tools; (iv) specific skills and techniques for various tasks. |
| — appreciate that every task should be performed in a systematic way | |

COMMON CORE COMPONENTS

INCULCATION OF SCIENTIFIC TEMPER

Various steps involved in performing tasks in different occupations are based on scientific principles

- use simple tools related to gardening, cleanliness, home craft activities
Experimentation with tools and materials such as using gardening tools khurpi, spade, pruner, cleanliness tools — broom, duster, basket, spade, sackle, etc, tools for embroidery and stitching-work-needle, sewing machine, scissors measuring tape, etc , for-Knitting-knitting needle, tools for cutting/slicing vegetables, fruits, etc. and tools for wood work-saw, sand paper, hammer, etc
- practise hygienic principles with regard to body, belongings and keep the work place neat and tidy
Need to clean the hands and feet after taking part in various work activities at home/school Need to keep the place of work neat and tidy and ways to do so

COMMON CORE COMPONENTS

PROTECTION OF THE ENVIRONMENT

Analysis of problems due to poor sanitary conditions of work places near school, home and neighbourhood Effects of unhygienic environmental conditions on the health of workers in a factory, shop, work-shop, sweets shop, dairy farm, etc Participation in community activities for educating the people about uses of cleanliness, protection of the natural resources etc

- prepare beautiful and useful objects with waste/low cost materials for beautifying home, school and surroundings
Tools and materials needed for preparing various articles from waste materials
Sources of waste materials and low cost materials in the locality
Types of articles/objects which can be made out of these materials

COMMON CORE COMPONENTS

INCULCATION OF SCIENTIFIC TEMPER

Systematic steps such as selection and combination of materials, decision about the size, proportion of various parts, quantity and quality of materials, shape/appearance of the final product, effect the performance of a task(s)

- take care of people at home, school and in the community.
Care of young, old and sick people.
- show concern for the needy
- participate enthusiastically in celebrating National Days, social functions, festivals, school functions on special days
Different tasks at home/school/neighbourhood where participation is possible such as cleaning, cooking, stitching, washing clothes, care of plants, animals, attending to guests, maintaining cleanliness in the neighbourhood.

helping in community functions such as fairs, exhibitions, natural calamities etc., helping injured people; helping schoolmates in organising various functions; and helping teacher, schoolmates in daily school activities

CLASS V

— identify various work situations in the locality	Work situations related to different occupations in the locality.
-- identify the occupations in specific areas and their work situations.	Classification of different types of work situations such as work situations in villages, semi-urban areas, big cities, hilly, plains, coastal, desert areas Tools, materials used in various work situations
-- appreciate the interdependence of various occupations on each other	
— appreciate the contribution and importance of workers at different levels	Effects of modernisation on improvement of techniques various occupations.
— identify the raw materials available in the local environment/and those that are available in different parts of the country	Local forest products and other natural resources Natural resources in the country such as forests, soils and minerals etc Uses of these resources in industrial progress of the country
— recognise the scientific principles and procedures underlying the various work situations in the locality	Scientific principles and processes involved in different tasks related to various occupations in the locality
— recognise the contributions of experimentation and research centres related to agriculture, food preservation and animal rearing	Functions and responsibilities of different service centres in the locality. Research centres related to various occupations in the locality and the contributions made by these in the improvement of the quantity and quality of the products

COMMON CORE COMPONENTS

NATIONAL IDENTITY

Significance and contributions of Krishi Vikas Kendras, Vigyan Shikshan Kendras, Art and Craft Centres, Animal Husbandry Centres and Canning and Food Preservation Centres of the country.

- | | |
|--|--|
| - learn proper use of simple tools and materials in work situations; | Tools and materials used in various occupations, their maintenance and storing |
|--|--|

COMMON CORE COMPONENTS

INCULCATION OF THE SCIENTIFIC TEMPER

Precautions to be taken while using different tools

Importance of correctness and specificity in performing every task

Importance of proper body position and posture while performing a task

- | | |
|---|---|
| — prepare beautiful and useful objects with waste, low-cost materials for beautifying home, school and surroundings | Types and sources of low-cost and waste materials that could be used for making useful and decorative articles |
| — exhibit good work habits e.g. cooperation, regularity, perseverence, imaginativeness, resourcefulness | Need to develop good habits and proper attitude towards manual work |
| — recognise that adoption of scientific steps helps saving time, energy and increases work efficiency | |
| — practise hygienic principles of living and keep surroundings clean | Importance of personal cleanliness in work situations
Effects of sanitary conditions in and around the work situations |
| — participate in cleanliness campaigns in school and neighbourhood. | Methods and ways to create awareness about cleanliness among children and community |

COMMON CORE COMPONENTS

PROTECTION OF THE ENVIRONMENT

Ways to keep the work situation unpolluted and its effects on health of workers and work efficiency

- | | |
|---|--|
| — recognise the need for taking care of the needy in the society | Social service — its concept
Organisations/service centres in the locality engaged in social service. |
| — participate enthusiastically in celebrating National Days, National festivals, local festivals, etc | National festivals — their significance
Reasons for celebrating these festivals.

Significance of National Anthem
Popular patriotic songs. |

— P. Dasgupta
— Daljit Gupta

CHAPTER 7

MINIMUM LEARNING OUTCOMES AND CONTENT FOR TEACHING ARTS

Introduction

The various forms of art comprise communication through non-verbal expression. This kind of expression is part of the natural growth in the child. From a very young age, the child begins to react and respond to lines, colours, forms, sounds and movements. He/she uses these elements of art sub-consciously in his/her play-activities. The rhythmic movements, the gesticulations, the humming of tunes and the scribbling of shapes and forms are effortless expressions which come to him/her spontaneously.

The child has many stored up ideas, thoughts and emotions which he/she gathers while feeling and observing whatever happens around him/her in the environment. Nobody really knows how much he/she absorbs in his/her mind while interacting with various things and situations. In the nature, he/she sees the hills, rivers, trees, flowers and wonders at them. He/she watches with awe the movement of tiny insects and the behaviour of different animals. At home, he/she loves his/her kith and kin, likes his/her playthings and enjoys fairy-tales and other stories. In the neighbourhood, he/she becomes familiar with friends and people engaged in various occupations. He/she learns songs and tunes and appreciates their sweet melodies. Thus, his/her mind is full of numerous objects and things, songs and actions, shapes and designs and he/she has an urge to express them. With his/her natural ability, he/she discovers his/her own ways to give expression to his/her ideas and emotions, through various art forms.

Before entering school, the child has a fair vocabulary of art-forms, an ability to manipulate certain kind of art material and a personal mode of expression. At this age, his/her expression is at the symbolic stage which means that his/her drawing or painting or modelling are excessively simplified.

General Objectives

Through art education, the learner should develop:

- observation, imagination and self-expression through the media of visual and plastic arts;
- free expression through simple form of music, dance and drama

- the ability to discover and identify preferable means for self-expression out of a variety of media and materials exposed to him/her,
- awareness of aesthetic elements in traditional arts and love for beauty in nature,
- sense of patriotism and pride in being an Indian.

Minimum Learning Outcomes (MLOs)

The development of the abilities and inculcation of the values stated above have been conceived in terms of Minimum Learning Outcomes (MLOs). A set of MLOs directly and conversely relates to a particular ability or value which has to be attained by the child at a desirable level of achievement. This level of achievement is called the 'mastery level' which would ascertain the learning outcome having been attained.

Content

Art education under the present approach provides the child with a variety of opportunities to develop his/her inherent capabilities. The syllabus proposed at the primary stage has been derived from the child's environment, both within and outside. It is of two types (i) flexible, and (ii) common core. The former is suggestive and can be modified to suit the local conditions for its organisation. But the latter is compulsory for all children irrespective of local conditions. In the school, it has to be ensured that each child attains a desirable level of achievement in artistic activities.

The National Curriculum Framework for Elementary and Secondary Education — 1988 (Revised Version) has recommended 10% time to be devoted for this subject. Considering that there are 200 working days in a year in the school, the instruction time for art education should be worked out as under —

The five-hour working day of 40 minutes periods each will have 6 periods per day (excluding the time for recess and school prayer). So there will be approximately less than one period available to this subject daily. But in a week 4 periods for each class may be judiciously used to realise the objectives of art education.

CLASSES I & II

Minimum Learning Outcomes

Content

*DRAWING AND PAINTING**The learner should.*

- | | |
|--|---|
| — draw one or two suggested objects from the imagination | Single object such as toy, home, friend, pet, etc

Two objects such as tree and hut, flower and leaves, myself and friends, etc |
| — make painting of one or two suggested objects from the imagination | Same as above or any other topic/topics common in the environment |

COMMON CORE COMPONENTS

NATIONAL IDENTITY

Drawing/painting the National Flag.

PROTECTION OF THE ENVIRONMENT

Drawing/painting trees, plants, flowers, etc.

EQUALITY OF THE SEXES

Drawing/painting two human figures — one girl and one boy

- | | |
|---|--|
| — draw one or two objects of his/her choice from the imagination | Free expression on any one or two objects as per the individual's choice |
| — make painting of one or two objects of his/her choice from the imagination. | Free expression on any one or two objects as per the individual's choice |

COLLAGE

- | | |
|--|---|
| — make simple collage to depict any object | Simple collage of different shapes or objects by tearing and pasting coloured paper |
| — paste picture cutouts in simple arrangements | Tear and paste shapes/pictures from waste printed materials |

COMMON CORE COMPONENTS

NATIONAL IDENTITY

Picture cutouts of National Flag and objects from flora and fauna

DECORATION

- make floor decoration with locally available material Simple floor decoration of geometrical form/natural scene.

COMMON CORE COMPONENTS

INDIA'S COMMON CULTURAL HERITAGE

Traditional shapes and forms of floor decoration.

- print pattern on paper by stamping with a crumpled paper or thread ball Printing by stamping with a crumpled paper ball or a thread ball

CLAY MODELLING

- make simple objects in clay from the imagination Modelling of objects in clay according to the child's preference
- make simple objects in clay on specified topics Modelling in clay any object such as geometrical forms, fruits, vegetables, etc
- make relief on clay slab with waste material. Relief on clay-slab with waste material

CONSTRUCTION

- make models of different objects from waste material Models of table, stool, hut, almirah, etc.
- make paper masks Simple masks out of paper bags, chart paper

MUSIC

- sing simple worded song A lullaby, action songs, rhymes, poems, etc (in chorus)
- sing 'Sare Jahan Se Achha' and other patriotic songs and school prayer etc 'Sare Jahan Se Achha' and other patriotic songs, school prayer, etc

COMMON CORE COMPONENTS

NATIONAL IDENTITY

Singing of 'National Anthem', 'Sare Jahan Se Achha', etc.

Singing of patriotic songs popular in the regional languages.

DANCE

- perform simple folk dances related to local festivals. Simple forms of folk dances.

COMMON CORE COMPONENTS

INDIA'S COMMON CULTURAL HERITAGE

Simple forms of folk dances

- imitate different sounds and actions of birds, animals and typical human characters Sound and actions of birds, animals and people seen in the local environment

COMMON CORE COMPONENTS

INDIA'S COMMON CULTURAL HERITAGE

Role playing of historical and mythological characters

Role playing of people in different occupations

- play roles of characters depicted in rhymes/stories. Role of characters from rhymes/stories in textbook/other books

Art Material

In order to provide creative experiences, the school will depend largely on the locally available materials. However, some basic materials have to be provided so that the learner becomes familiar with a variety of media and materials. Therefore, improvisation and mobilisation of available resources would be needed. Suggested below is the list of basic materials:

AREA OF ACTIVITIES

SUGGESTED ART MATERIALS

Drawing

Pencil/charcoal/pastel stick/sketch pen/coloured chalk/quill (kalam) and ink, etc, white paper/packing paper/news paper or any other paper

Painting

Pastel colours/sketch pens/coloured chalks etc., white paper/chart paper/packing paper etc

Collage

Coloured paper/cloth cuttings/waste coloured printed paper/natural materials such as flower petals, leaves, seeds etc, gum/flour paste, white paper/brown paper/chart paper/newspaper, etc

Decoration

Natural material such as leaves and flowers, pebbles, stones, shells, etc.

Printing

Waste paper/thread ball/cotton ball, ink pads/poster colour, white paper/packing paper/newspaper, etc.

Clay modelling

Potter's clay/pond clay.

Construction

Waste material such as empty match boxes, containers, chart paper, gum, scissors, thread, waste coloured paper, etc

CLASS III

DRAWING AND PAINTING

- make simple drawing of scenes/situations observed in the environment. Simple scenes/situations such as woman with a pitcher, balloon seller, kite flying, parents, flag hoisting ceremony, scenes from fairs and festivals and scenes from nature
- make painting of natural scenes and situations observed in the environment. Same as suggested above and any other scene from the local environment.

COMMON CORE COMPONENTS

NATIONAL IDENTITY

Drawing/painting any scene of the flag hoisting ceremony

INDIA'S COMMON CULTURAL HERITAGE

Drawing/painting scenes of fairs, festivals, etc using local art forms and media.

- draw any scene or situation from the imagination Simple scene or situation of one's interest
- make painting from the imagination. Simple scene or situation of one's interest

COLLAGE

- make collage of objects or decorative patterns Simple collage of a bird, flower hut or any pattern of one's choice
 - arrange cutout shapes in different compositions. Picture cutouts of different objects-living and non-living in simple composition
- Picture cutouts of national leaders

COMMON CORE COMPONENTS

NATIONAL IDENTITY

Collage with picture cutouts of any 5 leaders of national fame

THE HISTORY OF INDIA'S FREEDOM MOVEMENT

Collection of cutouts of freedom fighters

PROTECTION OF THE ENVIRONMENT

Picture cutouts of objects like flora and fauna and composing them into a collage.

DECORATION

- make floor decoration with locally available materials Simple designs on the floor
- decorate earthen pot with a design in lines Simple designs on earthen pot in two colours

COMMON CORE COMPONENTS

INDIA'S COMMON CULTURAL HERITAGE

Traditional motifs/patterns of floor decoration and pottery painting

PRINTING

- make pattern/design on paper surface by stamping shapes with a cut potato in one colour. Stamping shapes with cut potato on a paper surface

CLAY MODELLING

- make simple objects in clay from the imagination Modelling of objects of one's choice in clay
- make simple objects in clay on the assigned topic Simple objects in clay such as fish, birds, reptile etc.
- prepare relief on clay slab with waste material. Objects/scene on clay slab.

CONSTRUCTION

- make models depicting things seen in day-to-day life. Simple models such as cap, well, box, etc
- make different paper masks Simple masks

COMMON CORE COMPONENTS

INDIA'S COMMON CULTURAL HERITAGE

Traditional characters/forms of masks.

- make stick puppets. Simple stick puppets of humorous characters.

MUSIC

- sing folk songs and other locally popular songs. Folk songs and other popular songs related to the life of the community (Solo and chorus).
- sing the National Anthem and patriotic songs National Anthem and other popular patriotic songs.

COMMON CORE COMPONENTS

NATIONAL IDENTITY

Singing of National Anthem and patriotic songs such as Vande Matram.

INDIAN'S COMMON CULTURAL HERITAGE

Singing of folk songs and performing folk dances.

- recognise various musical instruments

Picture charts of different musical instruments common in the community.

COMMON CORE COMPONENTS

INDIA'S COMMON CULTURAL HERITAGE

Picture cutouts of traditional musical instruments.

DANCE

- perform folk dance related to festivals and seasons
- identify characteristics of local folk dances

Dances — folk and ceremonial.

Picture charts of local folk dances.

COMMON CORE COMPONENTS

INDIA'S COMMON CULTURAL HERITAGE

Picture cutouts of traditional folk dances

DRAMA

- participate in creative drama.
- imitate different sounds and actions of birds, animals and typical human characters
- play role of different characters from stories of Panchtantra.
- perform simple dance drama depicting Nature in poems.

Different situations of community life such as marriage scene, grocery shop, etc.

Sounds and actions of typical birds, animals and human characters

Characters from stories of Panchtantra

Simple dance-drama on poems depicting Nature.

EXHIBITION

- participate in putting up art exhibitions.

Display of art work

Art Material

AREA OF ACTIVITIES

SUGGESTED ART MATERIAL

Drawing	Pencil charcoal/pastel stick/sketch pen/coloured chalk/quill (kalam) and ink etc., white paper/packing paper/news paper or any other paper
Painting	Pastel colours/sketch pens/coloured chalks etc., white paper/packing paper/chart paper
Collage	Coloured paper/cloth cuttings/waste printed coloured paper/natural material such as flower petals, leaves, seeds, woodbark, broken bangles, etc., gum/flour paste, white paper/packing paper/chart paper or any other paper.
Decoration — Floor — Pots	Natural material such as leaves and flowers, sand, stones shells, etc. Earthen pots, powder colour and gum, brushes, khariya matti/chalk matti, etc.
Printing	Potato/lady finger/onion etc., white paper/packing paper/news paper, etc., inkpads/poster colour/powder colour and gum, knife etc.
Clay modelling	Potter's clay/pond clay and improvised modelling tools.
Construction (models, masks, puppets, etc.)	Chart paper/thick paper, etc., scissors, thread, powder colours and gum
Music	Percussion instruments such as pitcher/empty container, tabla, dholak etc., wind instruments such as harmonium
Dance	Costumes used in local dances.

CLASS IV

DRAWING AND PAINTING

- | | |
|--|--|
| — make simple drawings of scenes/situations on suggested topics that can be observed. | Simple scenes/situations, such as the sun and mountains, flowers and butterfly, an animal with its calf, any animal with its calf, any scene of a fair/festival. |
| — make painting of natural scenes/situations on suggested topics from the imagination. | Topics as suggested above or any other from the local environment. |

COMMON CORE COMPONENTS

NATIONAL IDENTITY

Drawing/painting of any scene of a National Day's celebrations

PROTECTION OF THE ENVIRONMENT

Drawing/painting of any natural scene

— draw scenes/situations from the imagination-make painting of scene/situation from the imagination Simple scenes or situations of the individual's liking

— make collage depicting a decorative pattern Scene/situation of the individual's liking

DECORATION

— make collage depicting a decorative pattern. Collage of any scene/idea/decorative pattern of one's liking

— make collage on suggested topics. Collage of object/scene such as butterfly on a flower, hut and tree, mother and child, etc.

— make composition with cutout shapes. Composition of cutout shapes/pictures

COMMON CORE COMPONENTS

NATIONAL IDENTITY

Composition of cutouts picture of 8-10 leaders of national importance.

HISTORY OF INDIA'S FREEDOM MOVEMENT

Arranging cutouts to depict any scene of the freedom struggle.

PROTECTION OF THE ENVIRONMENT

Composing cutouts of natural objects like flora and fauna.

— make floor decoration with locally available materials. Floor decoration

— make decorative design on thick paper/cardboard. Simple Design (floral or geometrical forms).

COMMON CORE COMPONENTS

INDIA'S COMMON CULTURAL HERITAGE

Using traditional motifs and patterns for floor decoration and designs on cardboard.

- decorate earthen pot with a pattern of lines and circles. Decoration of earthen pot.
- print designs on paper by stamping shapes cut out on vegetables. Patterns and design with shapes cut out on vegetables.

CLAY MODELLING

- make simple objects in clay from the imagination Modelling objects in clay
- make simple objects in clay on suggested topic. Simple objects such as birds, animals and human beings.
- prepare relief on clay with waste materials. Simple scene or situation

CONSTRUCTION

- construct models of things seen in day-to-day life Simple model of objects seen in day-to-day life such as bullock-cart, bus, house, etc.
- make different masks with cardboard. Simple masks made with card-board such as those of a joker, animal, mythological character
- make rod or stick puppets Simple puppets of different characters

COMMON CORE COMPONENTS

INDIA'S COMMON CULTURAL HERITAGE

Making masks and puppets by using traditional forms and shapes

MUSIC

- sing folk songs, ceremonial songs and popular songs Folk songs, ceremonial and popular songs
- sing National Anthem and patriotic songs. National Anthem and other patriotic songs (individually and in chorus)
- sing songs of adjoining States/UTs Songs of adjoining States/UTs

COMMON CORE COMPONENTS

INDIA'S COMMON CULTURAL HERITAGE

Appreciating folk and classical songs and tunes.

DANCE

- identify characteristics of regional classical dances.

Picture charts of regional classical dances.

DRAMA

- participate in creative drama based on any imaginary situation

Portraying different situations of community life such as harvesting time, post office, street fight, etc.

- perform simple dance drama

Simple dance-drama on poems depicting Nature.

- discuss drama played in the community

Discussion on drama

EXHIBITION

- participate in displaying art work

Activities related to art exhibition

Art Material

AREA OF ACTIVITIES

SUGGESTED ART MATERIALS

Drawing

Pencil/charcoal/pastel stick/sketch pen/coloured chalk/quill (kalam) and ink, white paper/packing paper/brown paper/newspaper or any other paper

Painting

Pastel colours/pental colours/sketch pens/wax colour/powder colour and gum/poster colours, etc., flat brushes (thick & thin), white paper/chart paper/brown paper or any other paper.

Collage

Coloured paper/cloth cuttings/waste printed material/natural material, etc gum/flour paste, white paper/chart paper/hard paper/brown paper or any other paper

Decoration

- Floor
- Pot

Coloured husk/coloured powder, sand, other natural material etc.

Earthen pots (locally available), Kheriya matti/chalk matti/chalk clay, etc.

Mask

Powder colour and gum, brushes, hard paper etc.

Printing

Vegetables (potato, onion, lady's finger, etc.) knife, poster colour/powder colour and gum, white paper/chart paper/brown paper or any other paper

Construction

Chart paper/hard card, gum, scissors, thread, powder colour/poster colour, brushes, bamboo stick, etc.

Clay Modelling

Potter's clay/pond clay improvised modelling tools, etc

Songs and Music

Percussion instruments, cassette tapes/records, etc., local musical instruments, etc.

Dance

Costumes of local and regional dances, chart making material, etc.

CLASS V

DRAWING AND PAINTING

- | | |
|--|--|
| — draw simple scenes/situations/events as suggested | Suggested themes from daily occurrences, events such as sunrise, boat on a river, village scene, a fair, market scene, rainy day, any theme based on a story in the textbook, any event in the freedom movement, theme on national integration, etc. |
| — give expression through painting on suggested topic. | Painting on topic/theme/scene as above |
| — draw scene or situation from the imagination | Drawing of any idea/scene from the imagination |
| — make painting of an idea or scene from imagination | Painting on any idea/scene from the imagination. |

COLLAGE

- | | |
|-------------------------------------|---|
| — make collage to express an idea. | Simple collage depicting idea/scene/decorative pattern, etc |
| — make collage on suggested themes. | Simple collage depicting any natural scene such as river-side, hawker, farmer, animal in the field, bird in the cage, cutouts of national leaders in a map of India |

COMMON CORE COMPONENTS

NATIONAL IDENTITY

Arranging picture cutouts of national leaders in the map of India.

DECORATION

- | | |
|--|---|
| — make a decorative design on floor/cardboard | Decorative design on floor/cardboard |
| — decorate earthen pots of different shapes with simple geometrical pattern. | Decoration with geometrical shapes such as circle, triangle, square, etc. |

COMMON CORE COMPONENTS

INDIA'S COMMON CULTURAL HERITAGE

Using traditional motifs and patterns for floor and pottery decorations.

- | | |
|-------------------------------|--------------------------|
| — make designs with stencils. | Designing with stencils. |
|-------------------------------|--------------------------|

CLAY MODELLING

- | | |
|---|--|
| — makes simple objects in clay from imagination. | Form of object in clay with details. |
| — make a simple object in clay on suggested topic | Simple objects in clay on suggested topics such as mother and child, cow, birds, etc |

CONSTRUCTION

- | | |
|---|---|
| — make models depicting objects seen in day-to-day life | Model of school building, health centre, railway station, etc |
|---|---|

MUSIC

- | | |
|--|--|
| — sing the National Anthem and patriotic songs | National Anthem and patriotic songs such as 'Vande Matram', 'Sare Jahan Se Achha', etc |
|--|--|

COMMON CORE COMPONENTS

NATIONAL IDENTITY

Singing National Anthem individually and in group.

Singing Vande Matram and other patriotic songs

- | | |
|--|---|
| — sing songs of different regions | Regional songs |
| — practice 'talas', 'layas' and 'matras' of Indian music | Elements of 'talas', 'layas', 'matras' in Indian classical music. |

DANCE

- | | |
|--|---------------------------------|
| — perform different regional folk dances | Different regional folk dances. |
|--|---------------------------------|

COMMON CORE COMPONENTS

INDIA'S COMMON CULTURAL HERITAGE

Performing and appreciating a variety of folk dances

DRAMA

- | | |
|---|--|
| — play roles of different characters from stories of Panchtantra and social life. | Role of the characters of the stories from Panchtantra and social life. |
| — participate in creative drama. | Role to depict events related to railway station, mock panchayat, assembly, etc. |
| — discuss drama seen in the community | Discussion on various aspects of drama. |
| — participate in the art exhibition. | Planning and organisation of art exhibition. |

Art Materials**AREA OF ACTIVITIES****Drawing****SUGGESTED ART MATERIALS**

Pencil/charcoal/pastel stick/sketch pen/coloured chalk/quill (kalam) and ink, white paper or any other paper.

Painting	Pastel colours/pental colours/sketch pens/wax colour/ powder colour and gum/poster colours, etc flat brushes (thick and thin) white paper/chart paper/brown paper or any other paper
Collage	Coloured papers/cloth cuttings/waste printing material/ natural materials, etc gum/flour paste, white paper/chart paper/brown paper or any other paper
Decoration — Floor	Coloured husk/coloured powder/coloured sand/natural material, etc
— Pot	Earthen pots (locally available), Khariya matti/chalk matti/ chalk clay, etc
— Mask	Powder colours and gum, brushes, etc
Printing	Vegetables (potato, onion, lady's finger etc) knife, poster colour, powder colour and gum, white paper chart paper/brown paper or any other paper.
Construction	Chart paper/hard card, gum, scissors, thread, poster colour/colour paper, brushes, bamboo stick, etc
Clay Modelling	Potter's clay/pond clay, improvised modelling tools, etc.
Songs and Music	Percussion instruments, cassette tapes/records, local musical instruments, etc
Dance	Costumes of local and regional dances, chart making material, etc
Drama	Stage decoration material, make-up items, costumes, etc.

CHAPTER 8

MINIMUM LEARNING OUTCOMES AND CONTENT FOR TEACHING HEALTH AND PHYSICAL EDUCATION

Introduction

The early childhood period of the child is characterised by freedom and fantasy. It is primarily a world of play activities. At this young age the need for play is as much important as the need for food, care, protection, affection, etc. As a matter of fact, the young, healthy child is constantly on the move — playing when he is not eating or sleeping. It is so strong a drive that he/she plays with anything found in the immediate surroundings. Play is a real source of joy and satisfaction to a growing child.

The pre-requisite for such an active life is a physically fit body and an alert mind. As the child grows, his ability for muscular coordination, rhythmic movement of body parts, hand-eye coordination, etc., increases. Simultaneously strength, speed and stamina also develop. His/her concepts of spatial relationship, time-distance relationship, space-time relationship get more precise. These natural attributes need to be channelized and formalized so that he/she can develop into a well-coordinated individual physically and mentally.

However, an ill-equipped body ridden with effects of malnutrition and aftermath of childhood diseases and disabilities can not achieve this end. Knowledge and practices related to health, therefore, should form an essential backbone of any physical fitness programme. Thus play and health are strongly inter-connected, play activities are good indicators of a healthy child.

Health has been, therefore, underscored as both individual and national concern. Although considerable strides have been made in promotion of health status of our people in the last four decades, indices like infant mortality rate, maternity mortality rate, death due to diarrhoea are much higher than even those attained by some developing countries in Asia. We have yet to reach the national goal of universal immunization. Health status and physical fitness are closely related. And yet, they have not received adequate attention in our school system.

Since the formulation of the National Plan of Physical Education and Recreation in 1956, the area of health education, physical education and sports has started receiving some attention. As per the guidelines provided in this document some efforts have been made to develop the curriculum for health and physical education at

the school stage. The curricular framework brought out by NCERT in 1975, laid the foundation for introducing "a wholesome and methodological programme of health and physical education." Subsequently, a draft curriculum for classes I to X was developed at NCERT in 1980 for implementation. However, being a non-scholastic area, its implementation has been tardy so far. The NPE-86 has again emphasized the need "for making sports and physical education an integral part of the learning process, and (for) including them in the evaluation of performance (of pupils)." In order to meaningfully coordinate the curricular activities undertaken in the wake of the new policy in this area, an allied curricular framework entitled "Health Education for School-Age Children" was brought out by Central Health Education Bureau (CHEB) and NCERT in 1989. These documents have formed the basis for formulation of objectives and learning outcomes, selection of content and teaching-learning strategies, and use of modes, tools and techniques for evaluation.

Lastly, it is necessary to highlight a few points about the linkage between physical and health education.

1. Health education has been not only considered as an integral part of physical education but also is expected to be integrated with other subject areas.

2. However, health education, being an overriding national concern, has been allotted separate 50% time in the physical education curriculum. This has been done in view of the fact that at present health education activities receive less attention.

3. Special attention needs to be paid to health education at this stage since it is the most vulnerable age in the development of children for survival, care, protection and sustenance of life. It is also the opportune time when right habits, attitudes and values are inculcated.

Selection of Content

Teaching of this subject is quite different from the other scholastic subjects. It is obvious that "doing" rather than "knowing" is the main focus here. Put differently "skill and habit" part of the objective is more important than the "knowledge" part. Hence mostly practice and activity-oriented content has been included here. Cognitive

objectives pertaining to Health Education curriculum have been included in the EVS (Science) curriculum. Therefore more stress has been laid on cultivating habits, attitudes and values for healthful living. Due to this, some repetition of learning outcomes and content has been unavoidable. It is necessary to emphasize that these should be considered as suggestive. They would need to be adopted as per the needs of the local situations. There exists a wide variety of indigenous games and good health practices among diverse socio-cultural groups in the country. Best use should be made of these local information and resources while transacting this curriculum.

Teaching-Learning Strategies

While organising health and physical education activities, it is necessary to be aware of certain principles and constraints that we face at the primary stage in our country.

1. Physical education is not to be taught as a special subject but has to be considered as an integral part of education being imparted for the total or all round development of the child. It is a fact that teaching scholastic subjects inside the classroom leaves much to be desired so far as the development of personality traits is concerned. Games, individual and group events in sports and athletics provide unique opportunities for fostering the qualities of leadership, cooperation, team-spirit, etc. Thus the teaching of this area should be considered as important as the teaching of the scholastic subjects.

2. Health and physical education programme should be made compulsory for all. The new philosophy of developing Minimum Levels of Learning in all children, demands that each and every child be helped to attain competence expected of him/her in respect of pre-determined learning outcomes (MLOs) in each area which is commensurate with that of his/her age group. Put simply, every boy and girl should be able to finish certain length of runs within certain time-limits, to jump certain levels of height, to throw ball to certain distances, etc. except in the case of disabled or those who have some special problems. Likewise participation in games is must for all children. It is necessary to help such children who are shy and unwilling to participate.

3. Physical education class must be interesting and enjoyable. It must create among students a sense of relief and relaxation by helping them to overcome the fatigue caused by the continuous sitting and mental work in four walls of the classroom. Most of all, this period should not be treated as just another lesson. The objective of recreation should be at the centre of these activities.

4. Although the programme has to be essentially of a general nature, it should not be lost sight of that it is also

the most appropriate age to identify the talent or potential of promising sportsmen and athletes. While the main objective would be to help each and every child to achieve minimum levels of attainment in fundamental skills in games and athletics, it is equally important that those with the natural gift are also spotted and encouraged to participate in competitions held at various levels.

5. At the primary stage, the same class teacher will have to organise the activities in this area. Proper orientation and training will need to be given to him/her so that adequate attention is given to the transaction of this curriculum in each and every school in the country.

Organisation of Activities

PHYSICAL EDUCATION

The teacher must plan the physical education programmes and introduce the activities in such a way that a large majority of students take interest and derive benefit from them.

Optimum conditions and facilities do not exist/nor the games equipment is readily available in all schools. Many schools still do not possess an adequate playground. In this case such activities should be chosen which can be conducted in a small area. The classroom or the verandah can be imaginatively used. Under "Operation Blackboard" a small beginning has been made by providing some minimum facilities to each and every primary school in the country. These should be fully utilised.

Climatic conditions in our vast country vary. These conditions have to be kept in view while planning the programmes and implementing this curriculum. In the areas of heavy rain and extreme cold, it is almost impossible to arrange outdoor play activities during the season. In the summer or the places where the climate is very hot, hours of peak heat of the day, i.e., 10 am to 2 pm will have to be avoided.

Play activities are perhaps only activities which children do not get tired of pursuing. In other words, repetition, duplication or monotony of activities do not seem to deter children from play. Obviously, no new learning of skills is involved and yet, children play with the same motivation, enthusiasm and vigour. It appears that intrinsic rewards such as hope of success, achieving better level of performance than the previous one, etc. and extrinsic rewards of winning the game or defeating the rival, receiving cheers or applause, winning medals, etc. sustain the tempo of activities which are already learned or mastered. Nonetheless, a physical education period may become dull and useless to young children. Besides they are in the process of developing new skills and competences some of which take a long time to master. Therefore, it is necessary to keep a few periods as in-

structional periods during which coaching is given for improving the previously learned skills and also learning new skills. This stage should be considered for learning and perfecting the fundamental skills which are needed to improve the performance in special athletic and games events later. In other words, it should be considered as the stage for laying a sound foundation for participation in games and sports at the later stage.

Handling a physical education class is quite different from teaching a mathematics, a language or a science class. Right stroke, kick, step, turn, jump, etc. requires a good demonstration which must be followed up by sufficient practice by the learner. During the practice, constant observation and advice for strengthening correct responses is very necessary. It is rather difficult to attend to a class of 40 to 50 students at a time. Thus it is necessary to divide the class into small groups. A number of combinations of methods of instruction could be employed. Depending upon the level of attainment of sub-groups, each may be given a different activity or different versions of the same activity or the same activity. There is always a sub-group of children who have attained a high level of performance or mastered the skills better than the others. The teacher should consider them as a resource group for him. She/he should make full use of their talent. They should be made leaders and be given responsibility to coach those who have not attained the minimum level of performance in activities. It would go a long way if the teacher concentrates in training a small group of gifted children for this purpose.

Physical education is an extremely broad and complex area. However competent and accomplished a teacher may be, it is well nigh impossible for her/him to be equally proficient in all the activities. It is, therefore, desirable that the teacher involve guest teachers from other schools or specialists in the nearby locality/institutions — amateur or professionals to instruct or coach the children. The talented or gifted children so groomed would not only help the teacher in handling a large class but also would help those who are gifted and desirous to participate in competitions, whatever level they are organised.

Until now our focus has been a class or instruction to be imparted to a homogenous group of children. Activities of sports and games provide a unique opportunity for helping children of different ages to participate at a time in a variety of competitions. This kind of activities involving heterogeneous groups of children of the same institution also help them to know each other and to develop a bond of belongingness to one's own institution. Competitions within the same institutions are known as intramural competitions. The intramural competitions should form an essential part of the physical education programme of the school. The main purpose of these competitions should be to encourage mass participation.

Sports and athletic activities are competitive in nature. One who plays — and fortunately to play is instinctive — likes to compete against others. He/she loses interest in play if he/she does not get a chance to participate. Therefore it is important that a large and varied number of activities are included in the intramural activities so that each and every child gets an opportunity to select and participate in at least one activity that he/she likes. It needs to be pointed out that these competitions also provide opportunities to spot talented children for competitions organised at other levels.

Health Education

Health education in school should not be considered as the sole responsibility of a single teacher. Since it is strongly recommended that it be integrated with all subjects wherever possible, development of healthy life styles through healthful living should be shared by all teachers.

Emphasis at the primary stage should be on development of health practices through conscious planning and supervision. The teacher will present an example of health behaviour she/he wishes to develop among students. An illustrative health practices chart may be developed as Minimum Learning Outcome. Students may be observed constantly for these practices. The HEALTH CODE consisting of related practices to be developed according to priority, may be prepared (see appendix). The health problems of students revealed through a medical examination may also be used in evolving the health code. It is necessary to point out that such health codes should have relevance to local situations, since the health problems and unhealthy practices may differ from locality to locality and from group to group. This is the very reason why the National Curriculum for Elementary and Secondary Education — A Framework' (Revised Version, NCERT, 1988) has emphasised the need for decentralising the process of preparing instructional material to the field level.

The "Health Code" so prepared to be followed by one and all children in the school should be displayed, preferably with visuals such as illustrations, pictures, charts for the benefit of younger children who cannot read. After these preliminary practices have become habits, an upgraded list of health code be prepared and displayed. This process may continue till almost all desired practices become habits.

The focus should also be on development of proper skills involved in these practices. Habits and practices exhibited by the teacher provide an educational opportunity for his/her students to initiate the exemplar behaviour. Activities such as collection or preparation of illustrations, drawings, pictures, health-charts, etc., skits, role plays, action-songs, demonstrations should be planned

well in advance. Similarly, resources available in the school and community should be located in the beginning of the year and their proper use and improvement of environmental facilities also should be planned.

Implementation of nutrition and health education projects in the country have indicated that efforts made by the school do not yield desired results if they are not backed by the parental and community support. Therefore, parental cooperation is of immense value in achieving the goal of universal primary health education. In fact if simultaneous changes in the traditional, harmful practices do not take place, the home and community may act as barriers to the attempts made by the school. The linkage between play activities and health has been highlighted in the beginning. Parents have to keep a close watch on the physical activities of children. Young children may overexert or indulge in physical activities which are not commensurate with their age levels, e.g., long distance running, jumping from heights, lifting weights, swimming, etc. They may not eat proper, nutritious foods to compensate or balance bodily exertion. There are also many hazards involved in letting children undertake physical activities beyond school hours. Of course, it is neither possible nor desirable to restrict children in this regard. Nevertheless, parents have to be vigilant on this score. It should be remembered that the healthy practices based on correct skills and supported by scientific knowledge appropriate to the age of students will lead to development of right habits, attitudes, influencing preferences and feeling of the students about healthy life styles.

Teachers have to keep an eye on the common signs and symptoms of deviation from the normal healthy among students under their charge. They should periodically check their growth and development in height and weight as well as screen their vision and hearing. Deviated cases should be referred to the personnel of the school health services or the Primary Health Care (PHC) centre nearby. In the case of non-availability of such facilities nearby, the parents of such children should be informed without fail for necessary action of their own. In addition, teachers may plan activities such as health exhibition, skits, mimics, songs, etc. during the celebration of the school-day so as to ensure a physically and mentally healthy environment for the student community in the school.

Facilities

Facilities like play material/equipment, a playground and a ventilated indoor hall are necessary for the proper and effective transaction of a curriculum in physical education. Recognising the need for essential minimum facilities, steps have been taken to provide a set of minimum facilities to every primary school in the country

under the centrally sponsored scheme called "Operation Blackboard". Maximum advantage should be taken of these materials.

Evaluation

PHYSICAL EDUCATION

As has been mentioned earlier, this curriculum would form a part of the total curriculum for the primary stage. As per the recommendation in the NPE, the dichotomy between scholastic and non-scholastic areas of learning has been discarded in developing the curriculum. Equal importance and hence appropriate weightage have been accorded to this so-called non-scholastic area of learning.

The rationale of and the basic approach to continuous and comprehensive evaluation have been explained in detail in Chapter 2. The Curriculum Model presented in Figure 1 in the same chapter show that the content and processes of areas of physical education and health education belong more to the Psycho-motor and Affective Domains than the Cognitive one. Hence the criteria of assessing the psycho-motor and manipulative skills, viz., accuracy (errorless), precision, speed and productivity should form the basis of evaluating skills as reflected in the performance of a variety of physical tasks (activities) listed under sub-areas, viz., Free movements, Rhythmic, Gymnastics, Simple combatives, Small-area games, Lead-up games and Athletics. So far as the traits/characteristics under the Affective Domain are concerned, the criteria of frequency of behaviour indicating a particular trait, consistency with which such behaviours occur and appropriateness should be used to evaluate the learner's development. In addition, the following criteria may also be kept in view when the performance is evaluated: ease, poise, grace, agility, defensive and offensive skills, readiness, willingness, confidence and courage.

Evaluation should be carried out keeping in view the Minimum Learning Outcomes (MLOs) clearly spelled out in the following pages. The main purpose of evaluation should be to ascertain as to whether the learner is able to attain the minimum level of competence in each of the areas of physical education programme. If the assessment indicates shortfalls, special attention should be paid to such children so that they are helped to reach the minimum level required to be accomplished. Using the criteria mentioned above, a complete record of observations for each child should be maintained. These observations should represent an adequate sample of behaviour relevant to the characteristic being assessed. Care need be taken to sample them over a fairly long period and on different occasions and situations. A five point grading system should be used as given below: Mastery level performance-A, Excellent performance-B,

Good performance-C, Average performance-D and Minimum level performance-E. No remark as "poor" performance be given to any child as it should be considered possible to bring each and every child to a minimum level of attainment. The same grading system should be used in evaluating socio-emotional traits/characteristics listed as MLOs. For example, the learner cooperates with his mates — always (at all times)-A, more often than not-B, some times-c and few times-D and rarely-E. It is extremely important to remember that growth and development of the young child at this age is not a steady, smooth and continuous process but may show sudden spurts, plateau or even regression.

Health Education

Many points already discussed above are relevant to

assessing the area of health education also. Therefore, only those points have been discussed below which are special to health education. It may be mentioned that the Cognitive aspect or, put simply, scholastic aspect is fully covered under Environmental Studies (Science) and evaluated with the help of paper-pencil tests. Hence the focus of evaluation here should be on the application aspect, viz., action to be taken by the individual of his/her own and those to be initiated in the community/society. These comprise health practices, habits, codes, interests, attitudes and values. Health records and appropriate check-list should be maintained along with ratings arrived at carefully. That development of such traits take a long time should never be lost sight of. Needless to mention, without the support from the community—both for individual and social action—it is well nigh impossible to nurture this sensitive aspect of personality.

HEALTH EDUCATION

CLASSES I & II

Minimum Learning Outcomes

UNIT : PERSONAL CLEANLINESS AND APPEARANCE

The learner should:

- practise habits of personal cleanliness and keep the body clean

Practices/Habits

Washing organs of elimination after defecation

Washing hands with clean water and soap/ash after defecation, after using toilet, after play and work, after touching a patient and/or his/her belongings and before touching or eating food

Taking bath regularly with clean water (using soap if available) at specified place in home or outside home.

Rubbing the body after bath with a clean cloth.

Brushing teeth with tooth brush or 'datun' every morning and at night before going to bed.

Rinsing and flossing mouth with clean water after eating.

Washing eyes with clean fresh water early in the morning, after play and before going to bed.

Keeping nails trimmed and clean.

Keeping hair clean and combed

Wearing clean clothes including under garments.

Using a clean handkerchief or a piece of cloth for cleaning hands, nose, etc

Wearing footwear while going to toilet/latrine.

UNIT - CARE OF BODY

— follow regular habits of sleeping, eating and going to latrine/toilet

Going to bed early and getting up early in the morning at about the same time daily.

Taking meals at about the same time every day

Going to latrine at about the same time every day

— protect his/her body against injury/harm

Using footwear while going out.

Wearing properly fitting footwear

Keeping footwear dry and polished

Following safety rules in the playground.

Avoiding use of pointed objects to clean tooth and ears.

Avoiding teasing animals

Protecting eyes from dust, splinters, dazzling glares and solar eclipse.

Avoiding reading in dim light or in a moving vehicle.

Keeping book or other reading material at about 35 cms from the eyes while reading

Avoiding playing on road, near well/river/pond, fire place, railway line and naked electrical wires

Avoiding playing with sharp objects.

Avoiding use of teeth for cracking hard objects, pulling nails or bending coins, etc

Avoiding listening to loud noise for long periods

Avoiding accepting eatables from strangers or going out with them.

Avoiding drinking water when food is in the mouth

Keeping play material and personal belongings at proper/specified place after use

Avoiding throwing/shooting stones, sand or arrows directed at others

— protect his/her body from diseases/infection

Walking on the footpath or if there is no footpath then on the extreme right side of the coming traffic

Crossing road on specified places like Zebra Crossing, sub-ways or over bridges.

Reporting injuries of self or others to teachers/adults without delay

Eating food from all major food groups Washing hands before handling food

Taking breakfast before starting day's work.

Eating clean food in clean utensils.

Avoiding eating in utensils used by others without thoroughly cleaning them.

Chewing food thoroughly before swallowing

Drinking safe water

Using clean hands and clean utensils for taking out drinking water from the container.

Keeping food and water covered.

Avoiding putting dirty fingers and other objects such as pen, pencils, play objects inside mouth.

Avoiding breathing through mouth

Using clean piece of cloth for sneezing, coughing and blowing nose

Taking rest when tired.

Maintaining proper posture while standing, sitting or walking.

Covering mouth and nose with handkerchief or a piece of cloth when some one is coughing or sneezing.

Wearing spectacles or any other corrective aid as prescribed/advised by doctor.

Taking part in play activities, games and open air sports daily

Avoiding biting nails or fingers

Avoiding touching eyes with dirty fingers or cloth or other objects.

Avoiding sharing comb, towel/wash cloth, tooth brush, handkerchief underclothes and bites on food with others.

Avoiding exposure to excessive heat, cold or rain.

Avoiding food exposed to flies and dust.

Keeping face uncovered while sleeping.

Eating seasonal raw vegetables and fruits after washing with clean water or peeling

Avoiding vigorous exercise immediately before or after taking meals.

Taking immunizations willingly as advised.

Avoiding taking medicines without consulting doctor/parents

UNIT CLEANLINESS AND BEAUTIFICATION OF SURROUNDINGS

— practise habits of keeping the surroundings clean and beautiful

Using latrine properly for defecation

Using covered containers as dustbin to dump waste material and garbage.

Avoiding spitting in public places

Keeping classroom, furniture and playground clean and beautiful.

Avoiding throwing waste material indiscriminately.

Avoiding doing any harm to plants

UNIT MENTAL HEALTH

— practise proper social manners and courtesies.

Covering mouth and nose while coughing or sneezing with handkerchief or a clean piece of cloth

Addressing youngsters, elders and peers in a manner appropriate to traditions of family and society.

Being kind to others

Using polite, courteous and respectful words while talking to others

Avoiding teasing others.

Participating in recreational activities.

Helping others especially younger children, handicapped, old people.

Participating in functions/celebrations in schools

CLASS III

UNIT PERSONAL CLEANLINESS AND APPEARANCE

— practise habits of personal cleanliness and grooming

Continuing practices initiated in classes I and II

Demonstrating correct skills of carrying out practices like washing of hands and brushing the teeth.

UNIT CARE OF BODY

— observe rules to remain healthy and prevent injury.

Continuing practices initiated in classes I and II

Participating in games and sports organised in the school

Eating food leisurely and chewing it well.

Avoiding eating in between meals.

Avoiding excess coffee tea, soft drinks, or sweets

Washing with clean water or peeling raw fruits and vegetables before eating

Drinking plenty of water

Avoiding drinking water immediately after vigorous exercise

Covering body with enough bed clothes to keep warm during winter or chilly weather while sleeping

Wearing loose garments while sleeping.

Staying at a safe distance from fire, river well pond, railway lines

Helping personnel like health workers, sanitary inspectors etc in their work.

Playing with fireworks only when elders are nearby

Keeping inflammable objects away from fire

Avoiding Kite flying on roof tops

Avoiding smoking and/or chewing pan masala etc

Crossing roads first looking towards right and then left to avoid approaching vehicles

Following traffic signals given by traffic police.

	Following safety instructions while using mechanical or electrical gadgets.
	Observing safety rules for cycling, riding public transport and while swimming.
— protect himself/herself from sickness and disease	Continuing practices already initiated in classes I and II
	Protecting source of drinking water by avoiding washing of clothes and utensils in or near these sources
	Washing undergarments daily
	Preventing breeding of flies and mosquitoes by
	i) disposing garbage in covered containers and
	ii) not allowing waste water to accumulate in home or in pits or drains outside home.
	Drinking boiled water when not sure about its purity
	Protecting open wounds by washing them with clean water and keeping them covered.
	Taking advice of elders in case of sickness. When sick, follow medical advice.

UNIT : CLEANLINESS AND BEAUTIFICATION OF SURROUNDINGS

— practise habits of keeping the surroundings clean	Continuing practices initiated in classes I and II.
— participate in cleanliness campaigns.	Participating in Cleanliness Campaigns organised by the School.

UNIT : MENTAL HEALTH

— practise acceptable norms of social behaviour.	Continuing practices initiated in classes I and II.
	Using leisure time profitably e g following a hobby.
	Participating in community fairs and celebrations.
	Presenting example of desirable health practices and social behaviour to younger children and siblings.
	Keeping balance in daily schedule of work, study, play, recreation, rest, exercise and sleep
	Accepting responsibility for his/her actions

CLASS IV

UNIT · PERSONAL CLEANLINESS AND APPEARANCE

- practise habits of personal cleanliness and proper grooming

Continuing practices initiated earlier with more rigour so as to develop them as habits

Accepting responsibility for keeping articles of personal use in proper order e.g.

- i) washing own clothes
- ii) mending/sewing own clothes
- iii) polishing his/her own shoes

- take responsibility of initiating and supervising practices of personal cleanliness and grooming in siblings

Helping siblings in personal cleanliness and grooming.

UNIT · CARE OF THE BODY

- keep the body fit to work, study and play.

Continuing practices initiated in classes I, II and III with more rigour

Participating in simple outdoor exercises

Developing skill in counting heart beats and pulse and finding out heart and pulse rate.

Developing skill in reading clinical thermometer, and measuring weight and height of fellow students.

- follow correct methods of cooking, storing and preserving food

Washing vegetables before cutting

Cutting vegetables into bigger pieces

Using just sufficient water for boiling vegetables so as not to throw it away

Storing grains and pulses after drying them properly in airtight containers.

Storing left over food in closed containers at proper temperature to prevent spoiling.

Helping parents and acquiring skills in food preservation using indigenous and modern methods of food preservation.

- take steps to prevent falls, burns, poisoning, shocks, bites by animals and injuries to self/others

Using a proper ladder or stable support to reach higher place.

- | | |
|---|---|
| | Avoiding wearing inflammable clothes while working in kitchen. |
| | Avoiding throwing lighed objects indiscriminately. |
| | Keeping poisonous substances properly labled and away from the reach of younger children |
| | Avoiding touching naked electric wires, switches, sockets etc |
| | Keeping a safe distance from stray animals |
| — include food items from all food groups in his/her diet/meals as far as possible | Identifying locally available cheap food stuffs which are rich sources of protein, carbohydrates, different vitamins and minerals |
| | Developing taste for mixed diet |
| | Growing eatables in pots/school garden |
| | Eating seasonal vegetables and fruits as snacks in between meals |
| — identify the causes of deficiency diseases | Relating food stuffs with body needs and prevention of defciencies |
| | Planning meals so as to avoid occurrence of deficiency diseases |
| — share experiences and information collected on health promotion | Collecting health related materials/information from local health agencies/personnel |
| | Discussing the information collected for clarification with teacher/health personnel |
| | Presenting/sharing of health related information in the morning assembly in school |
| — see relationship between cleanliness and prevention of skin diseases. | Taking steps to prevent skin diseases like ringworm, scratches, etc. and prevention of dental caries/cavities. |
| — maintain his/her personal health e.g keeping health record, seeing relationship between gain in weight and height and state of health | Recording height, weight after every three months |

UNIT • CLEANLINESS AND BEAUTIFICATION OF SURROUNDINGS.

- | | |
|--|--|
| — cooperate in keeping the school/home clean | Supervising cleanliness in classroom, school compound, playground, school surroundings |
| | Taking steps to ensure proper disposal of waste materials in school |

- participate in taking care/planting of flowers, plants, trees etc
 - Ensuring that waste materials from the containers are removed daily and dumped at specified garbage dump/compost pit
 - Seeing that toilets/latrines and urinals are kept clean
 - Reporting negligence on the part of personnel responsible for maintaining the facilities to teacher/head master.
 - Helping/participating in programmes of planting of trees
 - Taking care of plants in the school/home.
 - Stopping younger children from doing any harm to plants

UNIT . MENTAL HEALTH

- take part in immunization drives, van mahotsavas etc
 - Continuing practices initiated in classes I, II & III.
- participate in celebration of Environment day, anti-tobacco day etc
 - Collecting information from local agencies, newspaper, media programme about various health education programmes.
 - Preparing posters, charts, messages etc
 - Participating in various activities in school and community.
 - Encouraging younger children/peers to participate in these programmes.
- take care of sick/wounded at home/school/community
 - Looking after the sick siblings, elders at home
 - Bringing to the notice of teachers, cases of accidents/sickness of peers in school.
 - Helping the sick/accident cases in the community.

CLASS V

UNIT . PERSONAL CLEANLINESS AND APPEARANCES

- practise/habits of personal cleanliness and grooming
 - Continuing practices initiated in classes I to IV.

UNIT . BODY CARE

- observe safety measures in classroom, playground laboratory and while on road.
 - Continuing practices started in classes I - IV.
 - Following proper postures for sitting, reading, writing, running and performing experiments.
 - Avoiding creating safety hazards

Taking safety measures in the playground, laboratory, while riding vehicles, etc.

Observing strictly the instructions for use of mechanical and electrical gadgets and also written on other items used in experiments in laboratories

Giving/taking first aid in case of accidents such as burns, bleeding, bites by animals/insects, foreign body in eye, fractures, shocks etc

Reporting sickness of self/siblings to elders

Consulting doctor in case of sickness and taking medicines as advised

Taking measures to prevent communicable diseases.

Participating in programmes for prevention of communicable diseases

Collecting information from related agencies on communicable diseases and steps to be taken to prevent spread of these diseases

Supervising the habits of the younger children for the prevention of.

- a) intestinal worms
- b) skin diseases
- c) air-borne diseases
- d) food and water-borne diseases
- e) insect borne diseases
- f) diseases caused by animal bites
- g) dental cavities (caries)

— develop skill in taking body temperature

Learning to take the temperature of the body.

Learning to prepare the ORS (Oral Rehydration Solution) and administering it.

UNIT CLEANLINESS AND BEAUTIFICATION OF SURROUNDINGS

Continuing practices initiated in classes I to IV with more rigour

UNIT . MENTAL HEALTH

— make proper use of public facilities and protect public properties

Making proper use of public facilities like water taps, toilets, parks etc

Following instructions put up at public places, national monuments etc

Avoiding and discouraging others from defacing and damaging public properties

Physical Education

Minimum Learning Outcome Activities/Skills

Activities/Skills

CLASSES I & II

UNIT . FREE MOVEMENT

The learner should .

- differentiate between different free movements as listed and demonstrate any movement/movements asked for in the directions and variations as instructed.

Walking

Walk forward

Walk-halt-walk

Walk with an object on head

Walk backward

Walk backward-halt-walk backward

Walk in line

Walk in circle

Walk on the line

Walk Zig-zag

Walk fast (Athletic walk)

Jogging

Jog on the spot

Jog and walk forward

Jog-walk-jog

Running

Run on the spot

Jog and run forward

Jog-run-Jog

Run-stop-run

Run Backward

Run Zig-Zag

Bending

Bend neck and trunk forward

Bend neck and trunk sideways

Bend neck and trunk backward

Bend forward and touch toes with alternate hands.

Rotation

Rotate neck

Rotate arms

Rotate wrists

Rotate trunk

Rotate hip

Rotate knees

Rotate ankles

Pivoting

Pivot forward

Pivot sideward

Pivot backward

Pivot and turn

Jumping

Jump and land on the spot with both the feet.

Jump and land forward

Jump and land sideward

Jump and land backward

Jump on alternate foot.

UNIT : IMITATION AND MIMECRY

- perform not less than 8 activities, imitating different actions and sounds as listed.

Monkey crawl, Camel Walk, Crab walk, Elephant walk and Horse gallop

Bell Ring, Bird fly, Boatman row, Boxer punch and Tree-sway.

Riksha pull, Solider walk and Train run

Duck walk, Frog jump and Rabbit jump

Cloud thunder, Hawker call, Tea vendor Call and train engine sound

Cat mew, Dog bark, Donkey bray, Lion roar, and Elephant Trumpet

UNIT SMALL AREA/MINOR GAMES

- participate in the activities for fun and enjoyment, taking advantage of free movements learnt
- develop qualities such as leadership, team-spirit, discipline and sense of belongingness.

Finding partner

Find out the leader

Fire on the mountain

Forming statues

Good morning King of the ring

On the tank in the pond

Simon says

Simple-tags

Seven stones (Satoulia)

UNIT RHYTHMICS

- perform different activities maintaining rhythm and grace as instructed.

Clap

Beat one foot on the spot and clap

Clap and pause

Beat alternate foot

Clap and beat alternate foot

Jump, stretch hands sideways and land with feet apart and back to position

Step forward/step sideward/step backward and back to position.

Clap and step forward/sideward/backward and back to position.

Step forward and lounge/step sideward and lounge/step backward and lounge and back to position.

Clap, step and lounge forward/sideward/backward and back to position

Step, turn, clap and lounge and back to position.

Clap in pairs

Action song

UNIT : COMBATIVES

- develop self confidence, courage and skills for self defense
 - Hand slap
 - Hand pull
 - Hand push
 - Toe touch
 - Hand wrestle
 - Stick wrestle
- learn atleast four out of the listed activities

UNIT LEAD UP GAMES

- develop manipulative skills which are essential in later stage to participate in games and other activities
 - Ball handling
 - Rolling and stopping a ball
 - Catching and throwing a ball
 - Bouncing and catching a ball
 - Kicking and stopping a ball
 - Rolling and hitting an object
 - Bouncing the ball while walking
 - Bouncing the ball against a wall and catching
 - Kicking the ball to a target
 - Throwing and catching a tenikoit ring.

UNIT · GYMNASTICS

- perform at least two types of fundamental skills of gymnastics such as rolling and hanging
 - Tripod
 - Rocking
- develop strength, agility coordination in order to perform the activities with ease and grace
 - Forward roll from squatting position.
 - Forward roll from standing position
 - Backward roll from squatting position
 - Backward roll from standing position
 - Hanging in bar
 - Hanging in rope
 - Hanging in rings

Hanging and swinging in bar/rope/ring

Rope jumping on the spot with both feet (single jump)

Rope jumping on the spot with alternate foot (single jump).

CLASS III

UNIT : FREE MOVEMENT

- differentiate between different free movements as listed and demonstrate any movement/movements asked for in the directions and variations as instructed

Repeat the previous activities of class I and II

Line formation

Right and left dress and eyes front

Attention, stand at ease and stand easy positions

Count the numbers

Open order and close order March.

Mark time march

Forward march

UNIT : SMALL AREA/MINOR GAMES

- participate in the activities for fun and enjoyment taking advantage of free movements learnt
- develop qualities such as leadership, team spirit, discipline and sense of belongingness

Blind man's buff

Passing the baby

Squirrel and Trees

Crows and Cranes

Dog and Bone

Dodge Ball

Fisher man's net

Four corner

Spun

Crocodile can't catch me

Arch ball relay.

Centipede relay

Tunnel Ball relay

UNIT : RHYTHMICS

- perform different activities maintaining rhythm and grace as instructed
 - Clap
 - Beat foot
 - Clap and beat foot
 - Clap-step-lounge
 - Clap-step-turn-lounge
 - Jumping jacks
 - Flag drill
 - Ribbon drill
 - Tippi
 - Action song

UNIT : COMBATIVES

- develop self-confidence, courage and skills for self defence
 - Tyre wrestle
 - Ring wrestle
- learn at least four out of the listed activities
 - Back to back lift
 - Back to back push
 - Back to back stick pull
 - Hold the neck

UNIT : LEAD UP GAMES

- develop basic movements and skills which are essential for effective participation in games and other sports
 - Running zig zag
 - Giving Kho
 - Can't relay
 - Hand dribble relay
 - Foot dribble relay
 - Pass basketball relay
 - Pass football relay
 - Underhand serving between partners
 - Underhand serving against wall

UNIT . GYMANASTICS

- participate in fundamental skills of gymnastics such as hanging and climbing for developing strength, agility, co-ordination and demonstrate at least one skill from each type

Walk and forward roll

Run and roll forward

Backward roll and stand

Climbing a pole

Climbing a rope

Hanging and swinging on ring

Walking and balancing in line.

Balancing on beam/bench

Jumping from height and landing with body balance

Rope jumping forward with alternate foot (skipping).

CLASS IV

*UNIT : FREE MOVEMENT**Callisthenics*

- perform four exercises in continuation from any one type

Repeat the previous activities of Class III

Free hand exercises with different counts (2 counts, counts etc.)

Combination exercises (exercise table)

Mass drill

UNIT . RHYTHMICS

- perform any two types of activities individually and participate in at least one with the group.

Hoop drill

Wand drill

Dumbbell drill

Folk dances

UNIT COMBATIVES

- develop self confidence, courage and skills for self defence through practice of all given activities
- participate in at least two for competition.

Hand push (squat position)

Hand pull (Squat position)

Cock fight

Knock over club

Lame duck walk

UNIT : GYMNASTICS

- practise all the activities for proportional development of body and demonstrate at least two activities.
 - Forward roll in continuation
 - Double forward roll
 - Wheel and barrow
 - Head stand (with support)
 - Hand balance (with support)
 - Simple pyramid

UNIT · TRACK AND FIELD SPORTS

- participate in different types of events/activities for physical fitness and select at least one for competition.
 - Rules and fundamental skills of Lead up activities
 - violations while running jumping and throwing.
 - Jumping, (approach, take off, flight and landing)
 - Throwing (grip stance, approach, release and landing).
 - Shuttle relay, hopping relay and Cricket ball throw

UNIT · TEAM GAMES

- participate in games for improvement of physical fitness and health, enjoyment through constructive activities, recognition as a skilled player and identification through his/her social habits such as discipline, team spirit, belonging and acceptance of victory and defeat as a sports man.
- participate in atleast two games and know rules fundamental skills, of the listed games

Kho-Kho

Court and equipment, composition of team, duration, scoring system, and violations while sitting/giving Kho and chasing.

Sitting, giving kho, and chasing.

Zig-Zag running and line Kho Kho.

Tenikort

Court and equipment, composition of team, scoring system and violations while serving, receiving and returning

Serving, receiving and returning (underhand and fore-hand)

Table Tennis

Equipment, composition of team, scoring system, and violations while serving and receiving and returning

Grip, serving (tossing ball, simple serving) and receiving and returning (fore-hand and backhand).

Badminton

Court and equipment, composition of team, scoring, system, violations while serving, receiving and returning)

Grip (racket and shuttle cock) serving (simple, high toss, deep serving) receiving and returning (forehand under hand and backhand)

Football

Ground and equipment, composition of team, duration scoring system, and violations while kickoff ball handling and out of play/out of bounds

Kicking (by inside of the foot) trapping (sole trapping) and dribbling (on the spot, while walking and running)

Five passes and Pin football

CLASS V

UNIT FREE MOVEMENTS

Warming up Exercises and Strengthening Exercises

- understand the necessity of warming up as a process of preparation through exercises prior to his/her participation in strenuous activities.

Repeat the activities of Class IV

Run in different directions and variations

Jump in different directions and variations.

Bend and stretch neck, hands, trunk and legs

Rotate neck, shoulders, hands, wrists, trunk and ankles.

Swing arms and legs.

UNIT . RHYTHMICS

- perform any two of listed activities individually and participate in atleast one with the group
 - Lezium drill
 - Pole drill
 - Folk dance

UNIT COMBATIVES

- learn atleast four of listed activities
 - Leg Typing
- develop self confidence, courage and skills for self-defence.
 - Drake fight
 - Finger Bend
 - Horse and rider
 - Tug of war

UNIT GYMNASTICS

- learn not less than two activities to develop strength, agility, neuro-muscular coordination and grace in body movement.
 - Forward roll and stand
 - Dive and roll
 - Dive, forward roll and stand
 - Backward roll in continuation.
 - Cart wheel
 - Simple pyramids.

UNIT . TRACK AND FIELD SPORTS

- perform variety of activities to develop, strength, speed, agility and endurance
 - Rules and fundamental Skills of Leadup activities
- develop awareness/self image and self confidence in his/her ability to become a competitive athlete later on
 - Fouls in running, jumping and throwing.
 - Running (Body placement in different starts, hand and leg coordination and body position) and baton exchanging in relay
 - Jumping (Foot and body movement in take off, body position during flight and landing) Throwing (acceleratic release and correct landing)
 - Kang Karu relay, jumping over the stick relay and foot ball throw.

UNIT YOGASANAS

- perform not less than four Yogasanas to develop physical fitness and mental concentration

Tadasana

Vrshasana

Bhujangasana

Halasana

Dhanirasana

Sarvangasana

Kukutasana

Ukatasana

Vajrasana

Chakrasana

Padmasana

UNIT TEAM GAMES

- participate in games for improvement of physical fitness and health, enjoyment through constructive activities, recognition as a skilled player and identification through his/her social habits such as discipline, team spirit, belongingness and acceptance of victory and defeat as a sportsman.
- participate in atleast two games and know the rules, fundamental skills of Lead up games

Tenikoit

Violations regarding foot fault, net touch and net crossing

Returning (back hand, dropping and placing).

Returning (back hand, dropping and placing).

Keep the tenikoit up relay.

Table-Tennis

Violations while serving.

Serving (spin serving) and receiving and returning (chopping and drive).

Keep up the ball up relay.

Badminton

Violations about foot fault while serving, net touching.

Serving (drop serving) receiving and returning (over head smashing and back hand returning).

Keep up the shuttle cock up relay.

Kho-Kho

Violations while sitting, chasing and running.

Driving, dodging.

Circle kho-kho and standing kho-kho.

Kabaddi

Court and equipment, composition of the team, scoring system, duration of the game and violations in riding and catching

Skill: Cant riding, catching and escaping.

Whip tay kabaddi and releasing the prisoner Kabaddi.

Football

Rules about free kick, goal kick, penalty kick, corner kick and thrown in.

Kicking (half volley) heading and throw-in.

Goal line football and circle football.

Basketball

Rules, court and equipment, composition of team, scoring system, violations while passing, dribbling and shooting

Fundamental skills-ball handling, passing (chest pass, side pass, bounce pass), Dribbling (on the spot while, walking and while running), Shooting (shooting under basket and shooting lay up).

Five passes, and captain ball.

Volley-ball

Ground and equipment, composition of team, scoring system, violations while serving, receiving and returning.

Ball Handling-tossing the ball, serving (under hand) receiving and returning (underhand).

Cricket

Ground and equipment, composition of the team, scoring system, duration of the game and violations while bowling and batting.

Holding the bat, batting (front and back-foot, straight blocking, and driving), Bowling, (grip approach release and landing), and Fielding (stopping, catching and throwing)

Tennis ball cricket and football cricket.

— Daljit Gupta

(The contribution of Messers J.S. Manjul, Deputy Director, CHEB; G.C. Bhoi, Reader, RCE Bhubaneswar; K.K. Khare, lecturer, RCE, Bhopal; S. Balakrishnaiah, Sr Lecturer, RCE, Mysore, and P. Ramakrishna, Reader, RCE, Ajmer, who reviewed the eighth chapter, is thankfully acknowledged)

Appendix

Suggested Health Practices (For Developing Health Code)

A HEALTH PRACTICES TO BE DEVELOPED AND SUPERVISED BY PARENTS

The learner should:

go to bed early and get up early in the morning at regular time.
go to latrine regularly at about the same time
take meals at regular times
rinse mouth after every meal.
wash hands after defecation and using toilet, before eating meals and handling food, after touching a patient or his belongings, and after work and play wherever possible with soap/ash
clean teeth properly in the morning (after meals when possible) and before going to bed
wash eyes with clean water early in the morning, after play and before going to bed for sleeping
take bath daily or as often as possible in the home or in the community and not in dirty water (like in a pond) to keep clean.
wear clean clothes after bathing
not share personal toilet, articles such as, tooth-brush, comb, towel/wash cloth and the articles for exclusive personal use like handkerchief, underclothes, etc
protect eyes from dust, glare, dazzle, solar eclipse, from splinters and foreign bodies
use sanitary latrine wherever available, and keep it clean.
help parents in household chores, in care of sick at home, and in care of younger brothers and sisters.
keep/put things at their proper place after use.
avoid putting pen, pencil and other small articles/things in mouth.
avoid using teeth to crack hardnuts or hard things or to pull open things such as iron nails, metal strips, soft drink bottles or bending, etc
take breakfast before starting the day
eat raw fruits and vegetables after washing them in clean water or peeling them, if clean water is not available
not eat food items exposed to dust and flies (including articles which fall on the ground).

B PRACTICES WHICH MAY BE DEVELOPED AND SUPERVISED JOINTLY BY TEACHERS IN SCHOOL AND PARENTS AT HOME;

come to school rested and relaxed

keep nails clean or trimmed short.
avoid biting nails and fingers.
keep all possessions orderly.
cover mouth with hand/handkerchief while sneezing or coughing
maintain correct posture while sitting, standing and walking (Sits tall, stands tall and walks tall).
hold books and keep note books in correct position and at a distance of about 35 cms from the eyes.
wear glasses or any other corrective aid if prescribed
avoid cleaning teeth and ears with sharp and pointed object.
breathe through nose.
blow nose gently when having cold.
take rest when tired
take part in play activities and games, in open fresh air and sun daily
keep surroundings clean and beautiful.
deposit waste materials in covered containers.
keep work-place and play-ground safe.
not allow water to accumulate in pits, drains, pitcher and tanks
avoid buying from hawkers and vendors food items exposed to flies and dust.
keep record of height and weight
take medical examination regularly every year and follow medical advice
visit a qualified doctor when sick.
avoid smoking, chewing tobacco, taking alcoholic drinks and drugs
Observe safety measures in classroom, school bus, or road and in the playground
avoid creating hazards in the school or in playground or in the community.
take first aid measures in case of injury or shock (inform teachers in case of an accident or ailment.)
avoid teasing stray animals or even pets.
follow rules of discipline in school, on the playground, at home and in community.
cooperate with others while participating in game activities.
participate in group activity, enjoys working and playing with others and take turns.

respect feelings of others or do not use disrespectful words.
ings.

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use polite, courteous, with peers and respectful words
while talking to elders
accept responsibility and fulfill it
accept failures as part of playing games or participating
in athletic events.
help young brothers and sisters and friends to cultivate
health practices.
eat in clean utensils.

keep your cover in a dry place
take safety measures to avoid falls, cuts, burns, poison-
ing and choking
not accept treats and favours from strangers.

Note It is a suggested list; new practices may be added
or substituted as per local needs

